User Manual

DM870/DM880 High Speed Dome

① **Before using the product, please read this manual carefully.**

v2.0

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Welcome

Thank you for purchasing our HIGH SPEED DOME.

This series speed dome is newly upgraded with AMP connector for easier installation and black liner for discreet surveillance. The powerful functions make it a state-of-the-art speed dome, and it will fulfill your wide range professional security surveillance need.

Features:

- Backup Memory, parameters memory is designed to locate on the PCB board in the housing, settings will remain when change PTZ module.
- Auto runing, runs the assigned function automatically after a period of idling.
- Timer runing,8 function schedules.
- 220 presets, 4 sequences with up to 32 presets each, 4 patterns with min. 180 seconds each, 4 pannings, 8 regions.
- On screen compass and pan/tilt degrees indicator.
- Up to 24 privacy masks.
- With dome, preset, pattern, panning and region titles, the titles can be set to not display, display or display for a period of time.
- Color/Mono auto, manual or switch at a set time. (for day/night models).
- With 4000V video, data, power lightning proof and surge proof.
- Hi-accuracy motor drives with 0.1 degree preset accuracy, min. 0.1 degree moving without any vibration.
- 360 degrees continuous panning, 90 degree tilt with auto flipping.
- Built in DSP camera, with auto focus, auto BLC, auto light control, auto white balance etc. functions.
- Informative Chinese/English OSD menu, all the functions can be set via OSD menu.

Declaration

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of FCC rules and European Union 89/336/EEC directive and its latest amended version. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in that case the user will be required to correct the interference at his own expense. Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under **CE** and **FCC** rules**.**

Precautions:

1. Only qualified and experienced person can carry on this installation.
2. Always conform to national and local safety codes during installation.
3. Use reliable tools only, poor quality tools may cause danger. e.g. ladder.
4. Do install the speed dome to appropriate environment (Please refer to the chart below). This product conforms to IP66 standard as specified in "Housing Protection Classification (IP code)".
5. Check the space and toughness of the site before installing. It should be able to bear 4 times the weight of the dome and its accessories.
6. Keep all the original dome package materials in case of future repacking and transporting.

Model	Indoor	Outdoor
Maximum Temp Range	-10 °C~+50°C	-40 °C~+60°C
Humidity	<90%	<90%
Air Pressure	86~106KPa	86~106KPa
Power Supply	AC24V/1.25A, 50/60Hz	AC24V/2.5A, 50/60Hz

Warnings:

1. **DO NOT** install this speed dome in hazardous places where combustible or explosive materials are stored or used.
2. **DO NOT** install indoor dome in outdoor environment.
3. This speed dome runs on 24V AC. **DO NOT** connect higher or lower voltage to it.
4. **DO NOT** turn power on before completing installation.
5. **DO NOT** disassemble any part of the items.
6. Use soft towel to clean the down cover when necessary. **DO NOT** use caustic detergent.
7. To protect CCD, **avoid** facing the camera directly to the strong light. e.g the sun.

Installation Preparation

Tools Lists:

You may need following tools for the installation:
Screws and nuts, screw driver, Small slotted screw driver, Wire cutter, Ladder, Drill, Saw.

Cables:

Video Coaxial Cable

The video coaxial cable should be:

1) 75 Ohm impedance.
2) Solid copper wire.
3) 95% braided copper shield.

Check the max transmission distance referring to the chart below.

International Gauge	Transmission Distance(Max.)
RG 59/U	750ft (229m)
RG 6/U	1,000ft (305m)
RG 16/U	1,500ft (457m)

RS485 Cable

0.56mm (24AWG) twisted pair's maximum transmission distances are as follows.

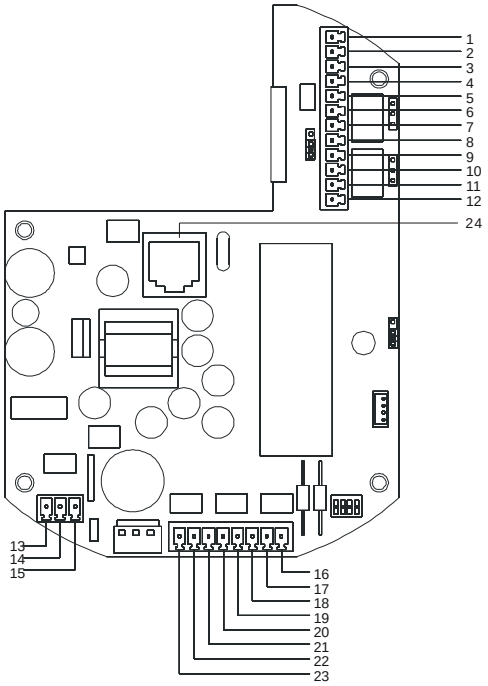
Baud Rate	Transmission Distance (Max.)
2400bps	5,906ft (1800m)
4800bps	3,937ft (1200m)
9600bps	2,625ft (800m)

NOTE: Use RS485 distributor if you need to transmit further. To learn more about RS485, please refer to appendix III.

DIP switches and jumpers settings

Please refer to appendix I to set the followings:
Protocol and Baud rate
Dome address
Video cable type
Alarm output method
RS485 termination resistor

Wiring Diagram for alarm, video &RS485 and Power



1 Alarm Input1
2 Alarm Input2
3 Alarm Input3
4 Alarm Input4
5 Alarm Input5
6 Alarm Input6
7 Alarm Input7
8 Common Port

9 Alarm Output1
10 Alarm Output1
11 Alarm Output2
12 Alarm Output2

13 24V AC
14 Earth
15 24V AC

16 Video Output
17 Video Ground
18 RS485+
19 RS485-
20 Reserved
21 Reserved
22 Reserved
23 Reserved
24 RJ45

Installation Type Guide

Three main kinds of installation are available for high speed dome:

1) In-ceiling Mount
2) Bracket Mount

There are 5 bracket options for bracket mount:

1) Wall Mount
2) Corner Mount
3) Pole Mount
4) Pendant Mount
5) Parapet Mount

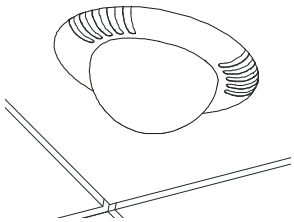
NOTE: Installation site should be able to withstand at least 4 times the weight of the dome.

Type	Weight (kg/lb)
Surface Dome	2.20kg (4.85lb)
Indoor Ceiling Dome	2.43kg (5.35lb)
Indoor Dome (excluding bracket)	2.93kg (6.45lb)
Outdoor Dome (excluding bracket)	3.78kg (8.33lb)
Pendant Bracket	1.53kg (3.37lb)
Wall Bracket	1.25kg (2.75lb)
Corner Bracket	1.90kg (4.19lb)
Pole Bracket	1.20kg (2.64lb)
Parapet Backet	6.50kg (14.33lb)

Bracket mount dome has indoor type and outdoor type. Comparing to indoor type, outdoor type has extra sun-shield housing, temperature sensor and heater. Outdoor type conforms to IP66 standard.

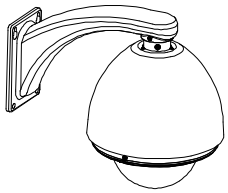
WARNING: DO NOT install indoor dome in outdoor environment.

In-ceiling Mount

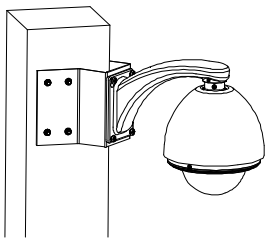


Bracket Mount

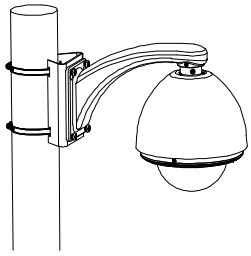
1. Wall Mount



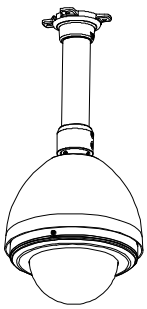
2. Corner Mount



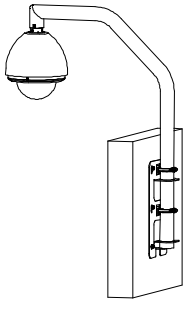
3. Pole Mount



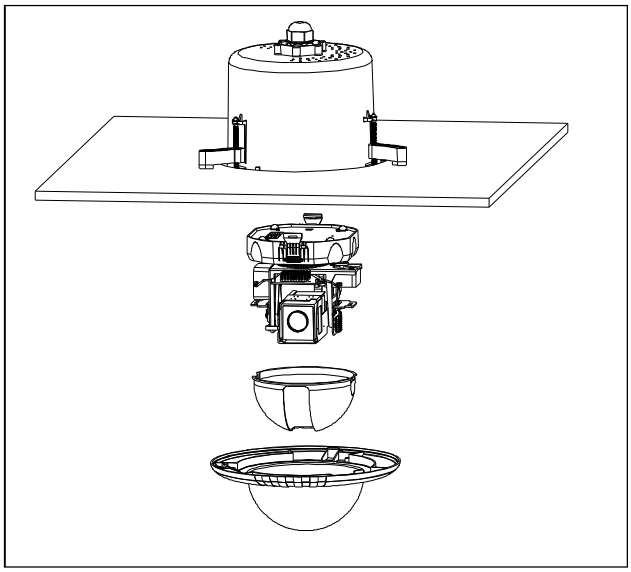
4. Pendant Mount



5. Parapet Mount

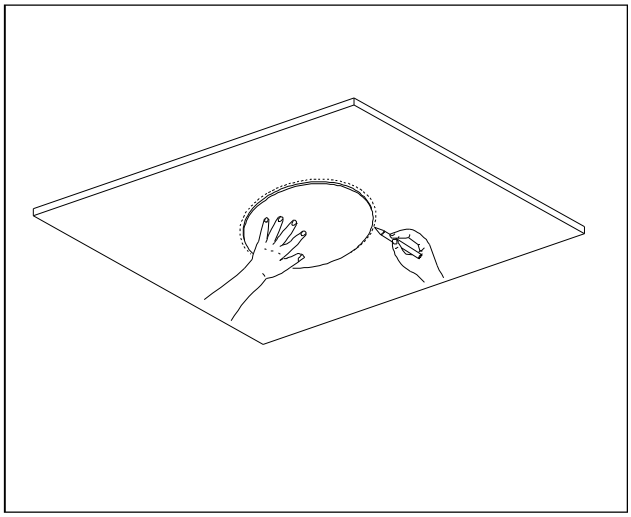


In-Ceiling Mount



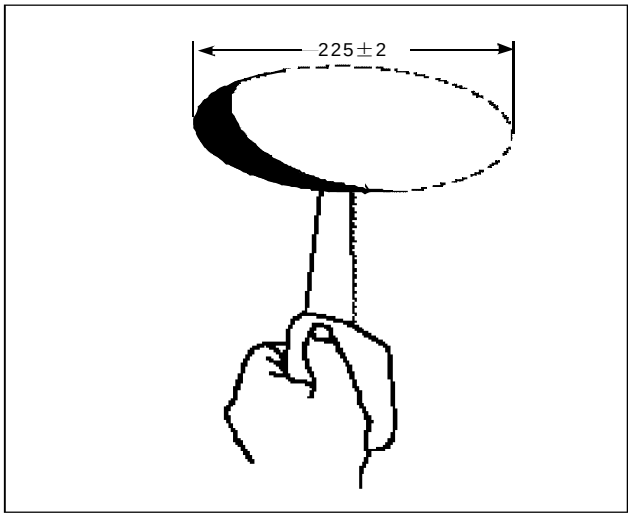
Installation requirements:

1. The thickness of the ceiling should be less than 42mm.
2. The ceiling should be able to bear 4 times the weight of the speed dome.
3. Upper space should be at least 20cm high.



1 Draw a circle on the ceiling

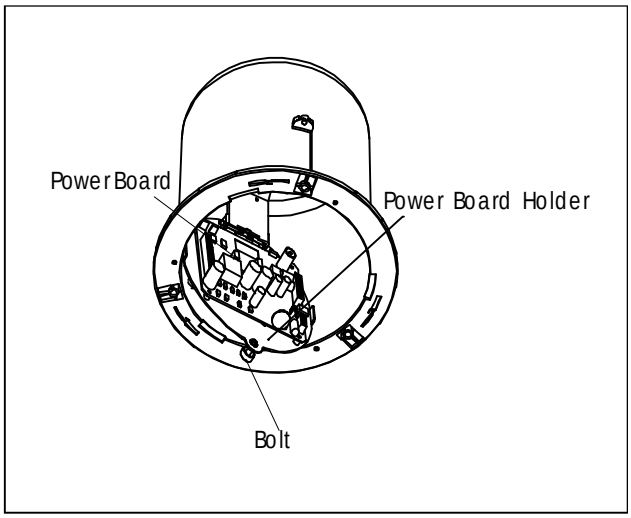
Take the paper pattern(accessory) as a template to draw a pattern on the ceiling. The paper pattern's diameter is 225mm.



2 Cut the circle off

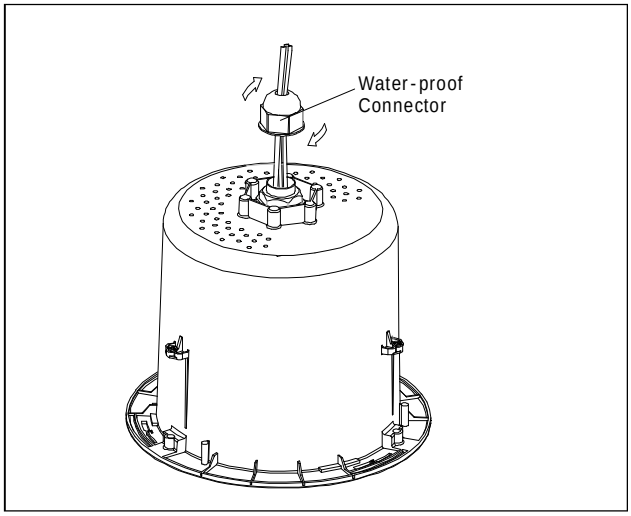
Use a saw or proper tool to cut off the circle.

NOTE: MAKE SURE the diameter of the circle is 225±2mm before cutting the circle off.



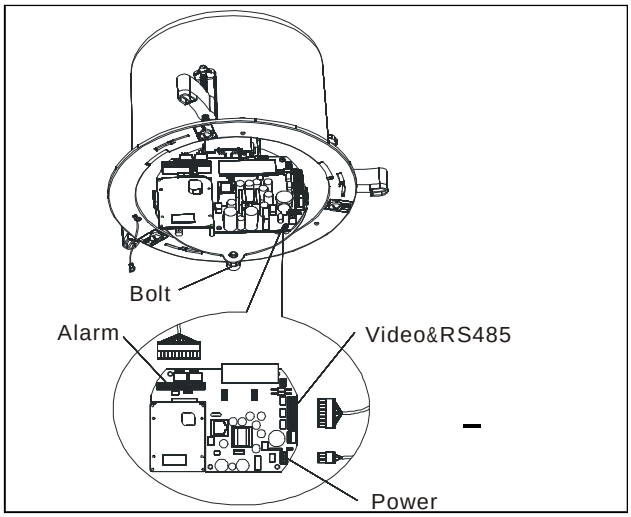
3 Unfasten the power board holder

Loosen the bolt to swing away the power board holder.



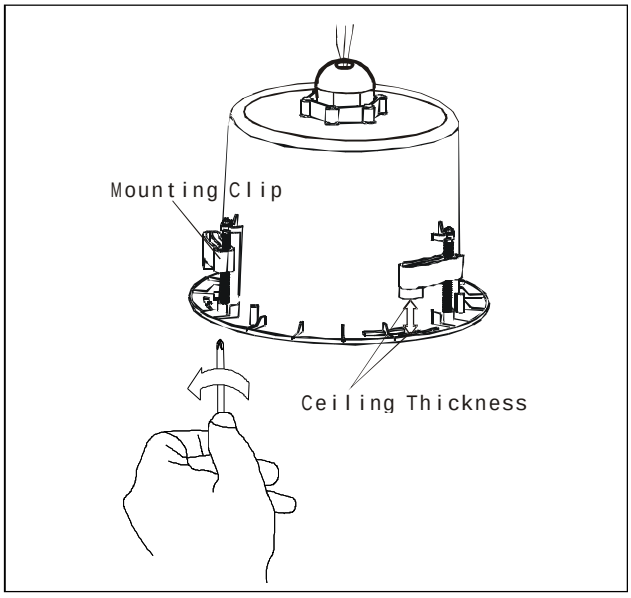
4 Prepare cables

Prepare wiring and then put Power/RS485/Video cables through water-proof connector and the top of housing. Finally, turn the connector into the top hole of the housing.



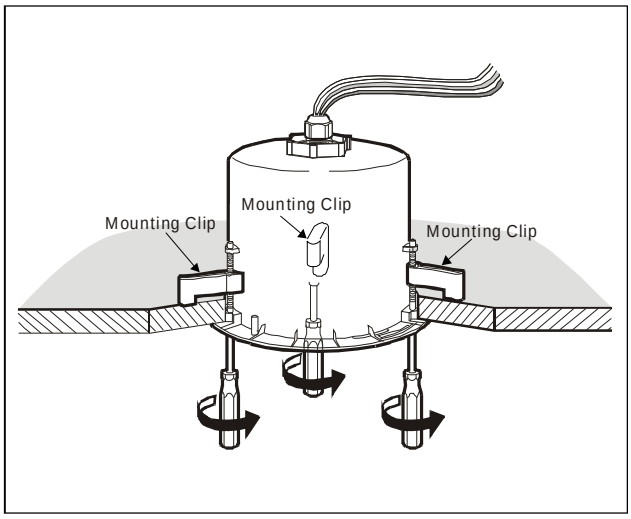
5 Connect cables

Insert cables into corresponding sockets on power board. After completing cable connection, swing the power board holder back and then turn on the power. The red LED will light up. Turn off the power after checking. If not light up, check the cable connection.
NOTE: There are signs for each port. connect cables as picture showed in page 3. Please MAKE SURE power is off before doing connection.



6 Adjust clips

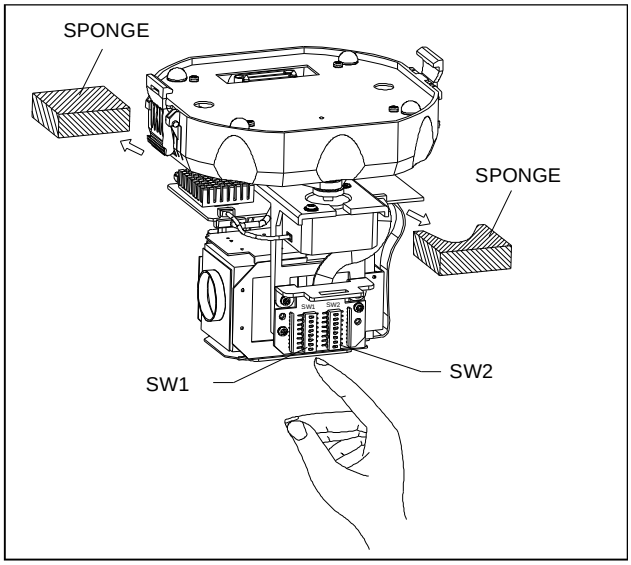
Adjust the height of the three mounting clips.Swing the three mounting clips to cling them to housing.



7 Install housing

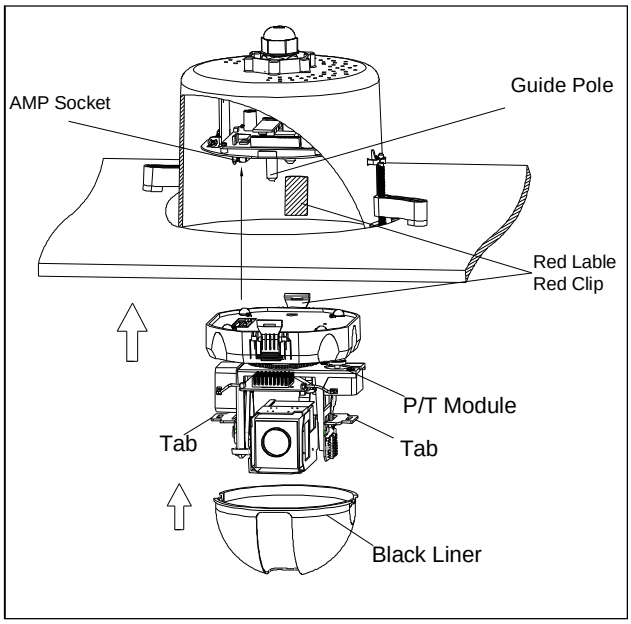
Push housing into ceiling and let the clips stretch out. Finally, screw the three clips to tighten the housing.

NOTE: Use even strength to adjust the three clips, or it may distort the shape of the housing.



8 Set dome ID, baud rate and protocol

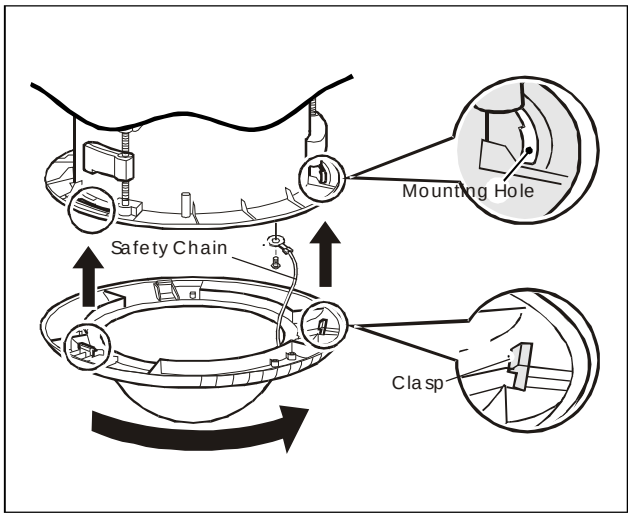
Set dome ID, baud rate and protocol via DIP switches (please refer to APPENDIX I). Remove the two sponges.



9 Install black liner and Pan/Tilt Module

Push the black liner into the two locking tabs. Align the pan/tilt module to the two clips, red to red, black to black and match the holes in pan/tilt module and the two guide poles.Gently push the module upward until you hear two click sound.

NOTE: Be sure the AMP sockets are clean without any dust. DO NOT forget to remove the lens cover.



10 Install down cover

Fix the safety chain on housing. The safety chain prevents the down cover dropping down. Match the clasps and mounting holes then turn the down cover frame anti-clockwise.

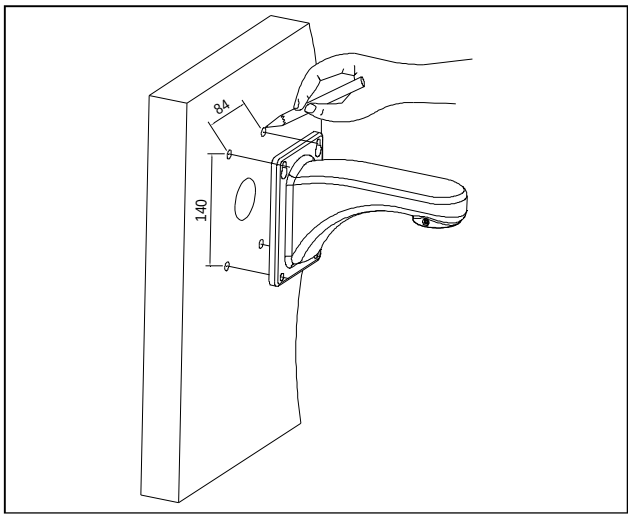
NOTE:

- Let the safety chain inside the arc groove of the down cover, otherwise it may scratch the lens.
- If you found difficult to fit in the down cover, try readjusting the three clips.

Wall Mount

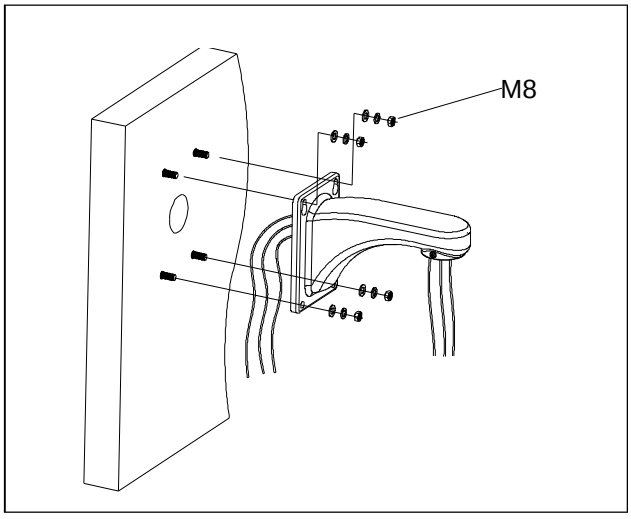
Installation requirements:

The wall mounting surface must be firm enough to bear 4 times the weight of the speed dome.



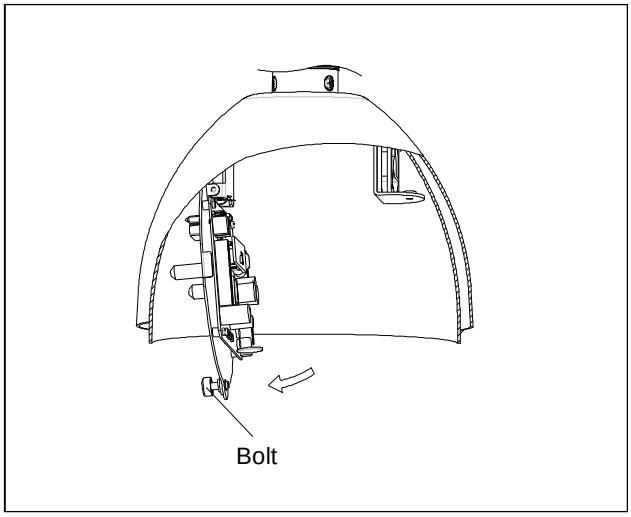
1 Mark screws positions

Take the bracket base as the template to mark the screws positions on wall. Drill the holes and put expansion screws inside.



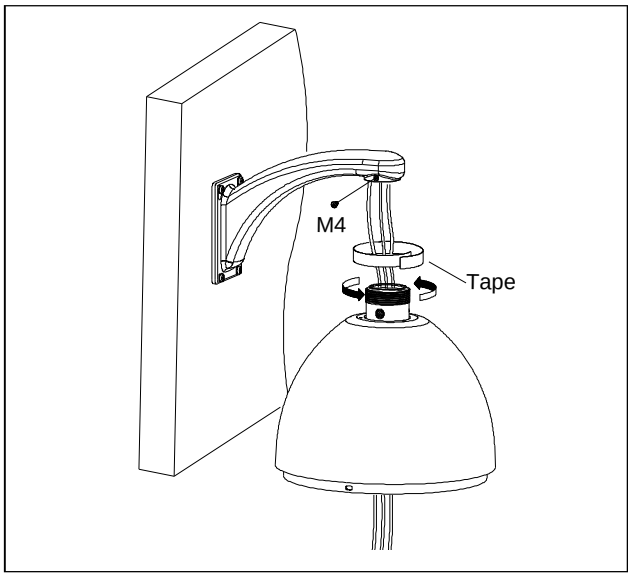
2 Install bracket

Put Power/RS485/Video cables through the cavity of bracket, and then install bracket on the wall.
NOTE: Put cables through the wall or aside the bracket.



3 Unfasten the power board holder

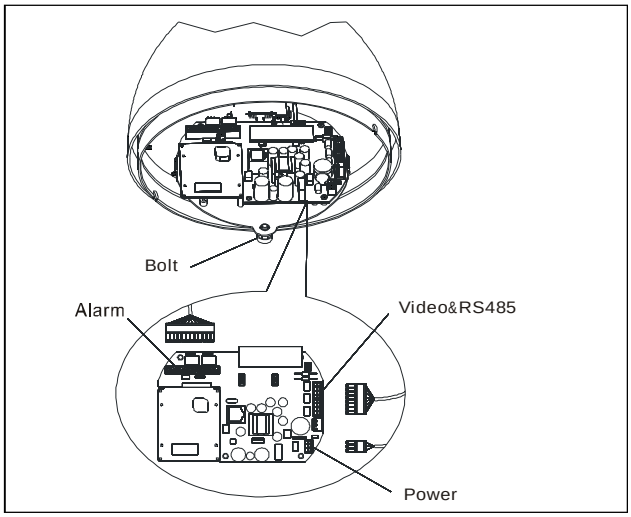
Loosen the bolt and swing away the power board holder.



4 Install housing

Insert cables through the hole at the top of the housing Apply water-proof tape to the housing thread. Then turn the housing onto the wall mount bracket and retain the connection with an M4 screw.

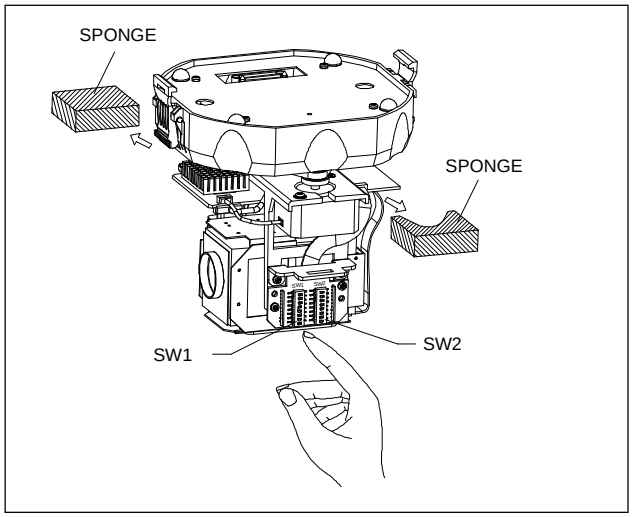
NOTE: Apply silicone to the gap between bracket and wall in the case of outdoor dome.



5 Connect cables

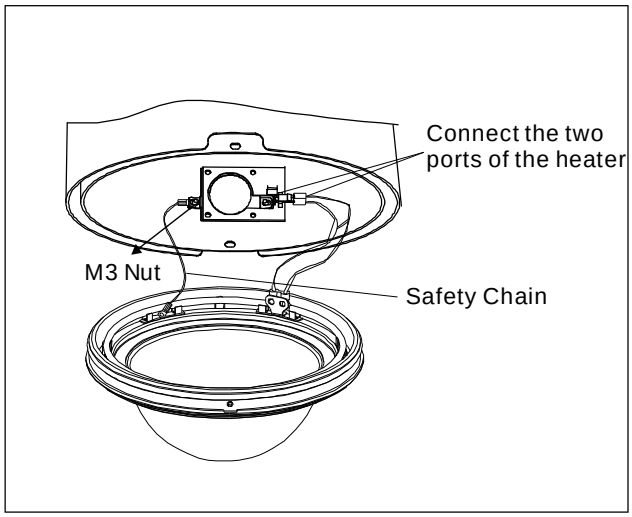
Insert cables into corresponding sockets on power board. After completing cable connection, swing the power board holder back and then turn on the power. The red LED will light up. Turn off the power after checking. If not light up, check the cable connection.

NOTE: There are signs for each port. Please connect cables as picture showed in page 3. Please MAKE SURE power is off before doing connection.



6 Set dome ID, baud rate and protocol

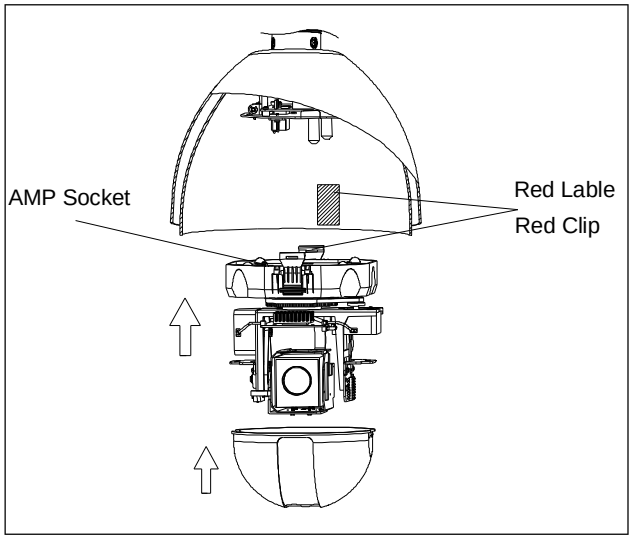
Set dome ID, baud rate and protocol via DIP switches (please refer to APPENDIX I). Remove the two sponges .



7 Down cover preliminary installation

Attach the safety chain with an M3 nut as picture shows. The safety chain prevents the down cover from dropping down.

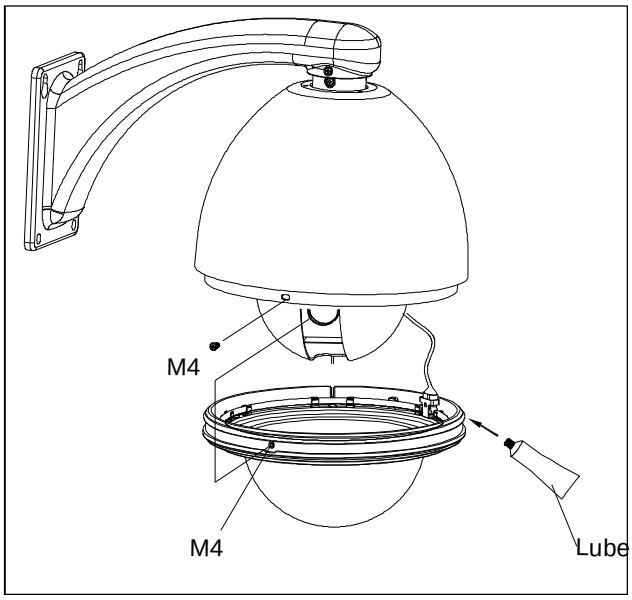
NOTE: Connect the heater plug into the socket in the case of outdoor dome.



8 Install black liner and Pan/Tilt Module

Push the black liner into the two locking tabs. Align the pan/tilt module to the two clips, red to red, black to black and match the holes in pan/tilt module and the two guide poles.Gently push the module upward until you hear two click sound.

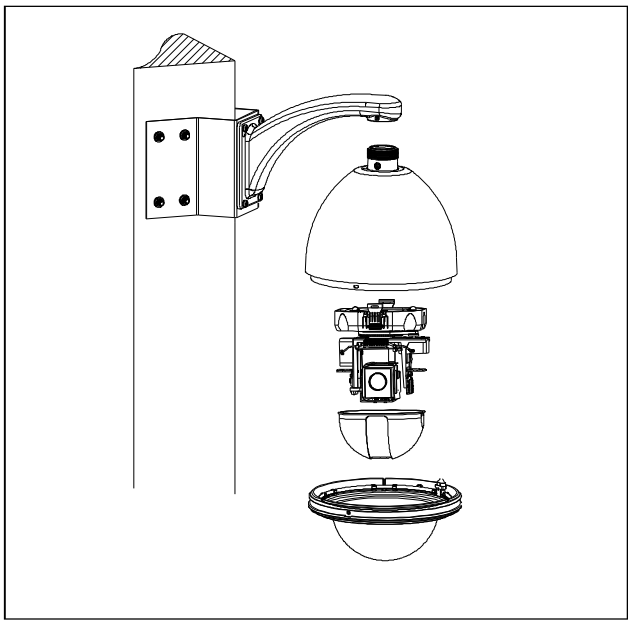
NOTE: Be sure the AMP sockets are clean without dust. DO NOT forget to remove the lens cover.



9 Install down cover

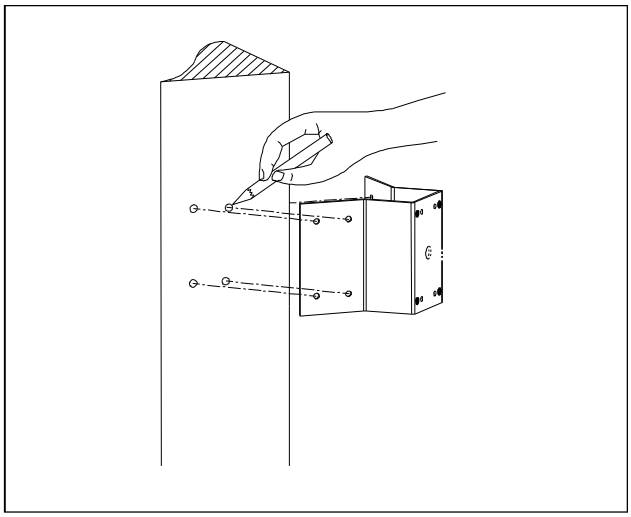
Loosen the two M4 screws on down cover ring. Apply lubricant to the O-ring to make down cover easier to slip in. Push upward the down cover into the housing and then fasten down cover with two M4 screws.

Corner Mount



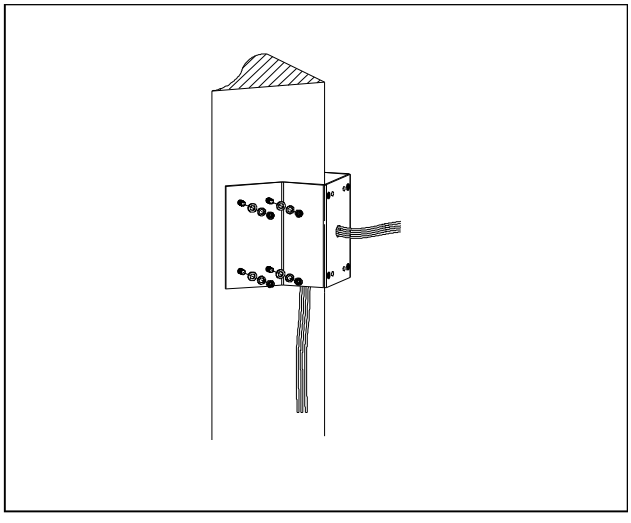
Installation requirements:

The corner mounting surface must be firm enough to bear 4 times the weight of the speed dome.



1 Mark screws positions

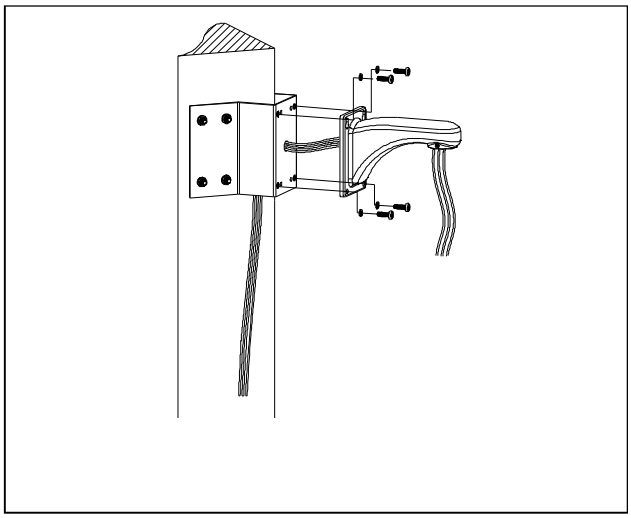
Take the bracket base as the template to mark the screws positions on the wall. Drill the holes and put expansion screws inside.



2 Install base

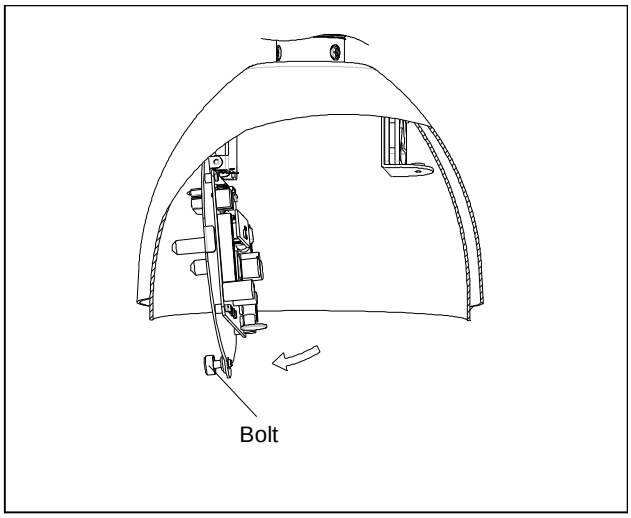
Put Power/RS485/Video cables through the hole of corner base and use M8 nuts to fasten corner base on the mounting surface.

NOTE: Put cables through the wall or aside the corner base.



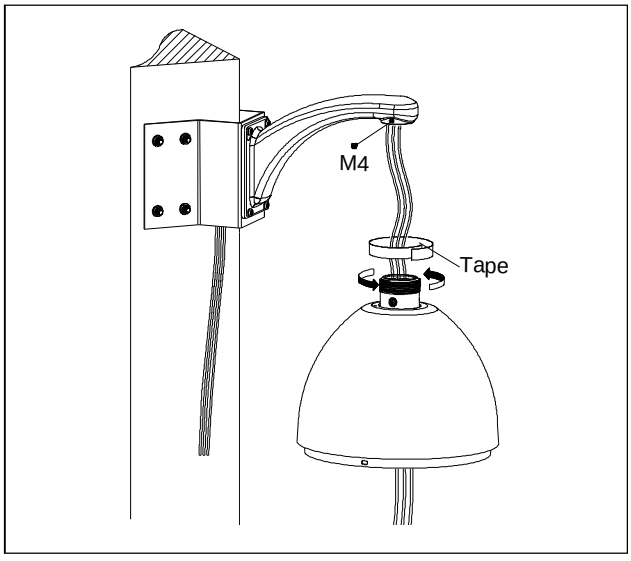
3 Install bracket

Put cables through the cavity of bracket and fasten bracket on base.



4 Unfasten the power board holder

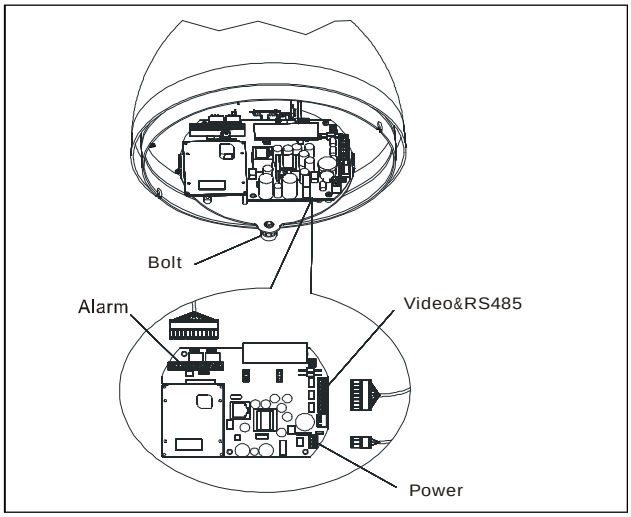
Loosen the bolt and swing away the power board holder.



5 Install housing

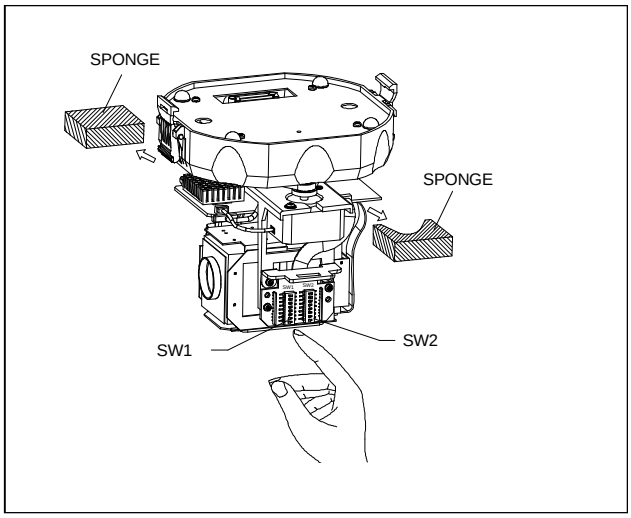
Insert cables through the hole at the top of the housing Apply water-proof tape to the housing thread. Then turn the housing onto the wall mount bracket and retain the connection with an M4 screw.

NOTE: Apply silicone to the gap between bracket and wall in the case of outdoor dome.



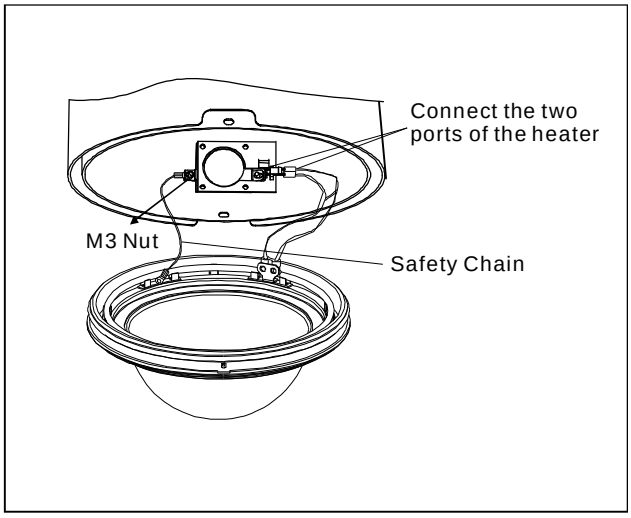
6 Connect cables

Insert cables into corresponding sockets on power board. After completing cable connection, swing the power board holder back and then turn on the power. The red LED will light up. Turn off the power after checking. If not light up, check the cable connection.
NOTE: There are signs for each port. Please connect cables as picture showed in page 3. Please MAKE SURE power is off before doing connection.



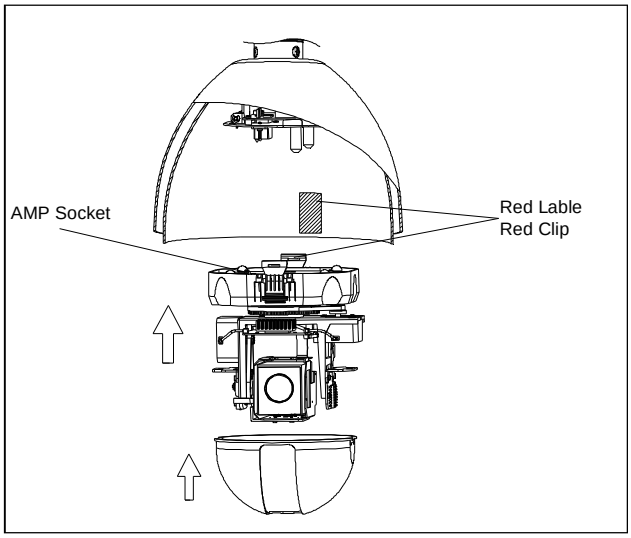
7 Set dome ID, baud rate and protocol

Set dome ID, baud rate and protocol via DIP switches (please refer to APPENDIX I). Remove the two sponges .



8 Down cover preliminary installation

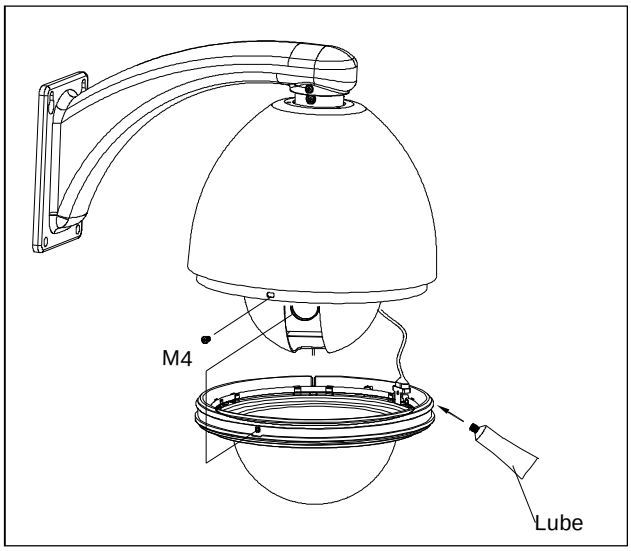
Attach the safety chain with an M3 screw as picture shows. The safety chain prevents the down cover from dropping down.
NOTE:Connect the heater plug into the socket in the case of outdoor dome.



9 Install black liner and Pan/Tilt Module

Push the black liner into the two locking tabs. Align the pan/tilt module to the two clips, red to red, black to black and match the holes in pan/tilt module and the two guide poles. Gently push the module upward until you hear two click sound.

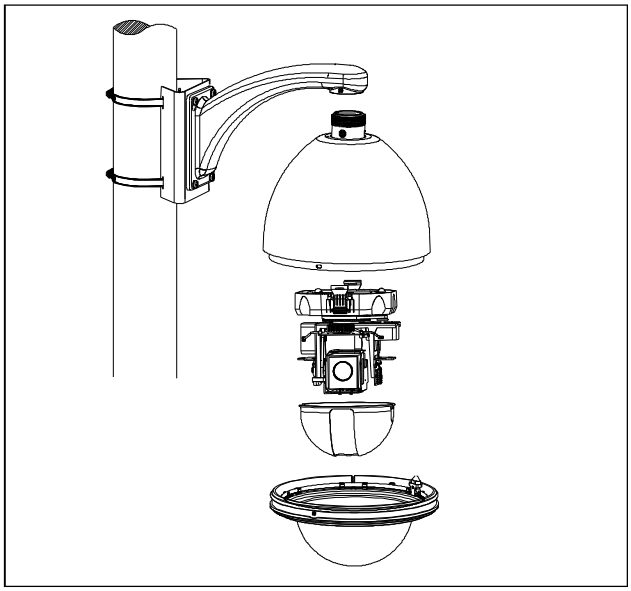
NOTE: Be sure the AMP sockets are clean without dust. DO NOT forget to remove the lens cover.



10 Install down cover

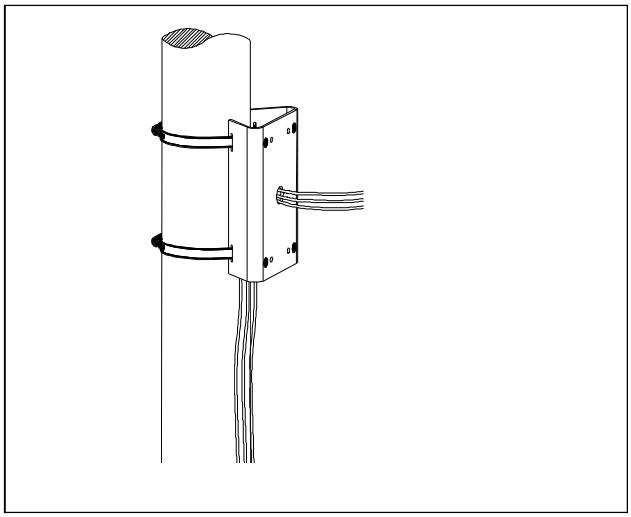
Loosen the two M4 screws on down cover ring. Apply lubricant to the O-ring to make down cover easier to slip in. Push upward the down cover into the housing and then fasten down cover with two M4 screws.

Pole Mount



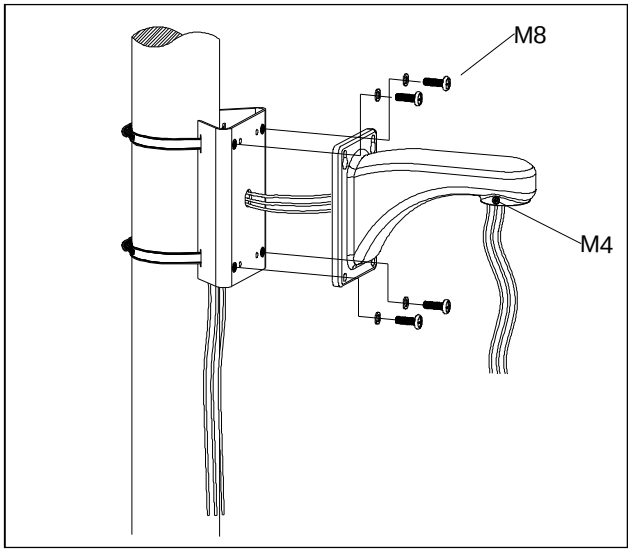
Installation requirements:

The outside diameter of the pole must be in the range of 130-150mm (5.12 ~6 inches).



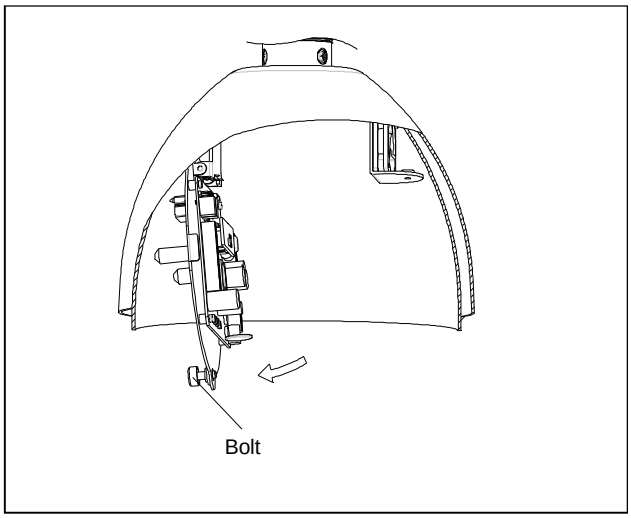
1 Install base

Mount the pole adaptor to the pole with two mounting clamps. Put Power/RS485/Video cables through the central hole of the bracket base, and then fix it around the pole.



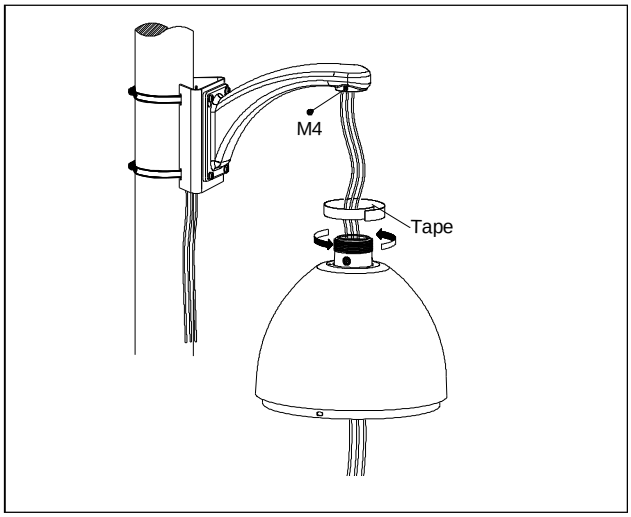
2 Install wall mount bracket

Put cables through the cavity of wall mount bracket and fasten it on base.



3 Unfasten the power board holder

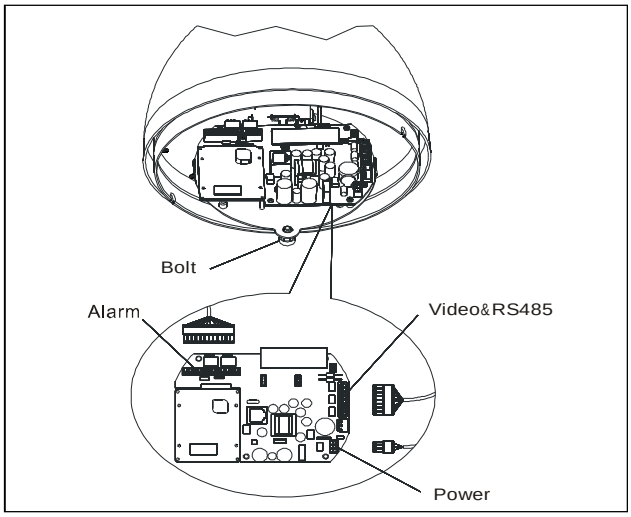
Loosen the bolt and swing away the power board holder.



4 Install housing

Insert cables through the hole at the top of the housing Apply water-proof tape to the housing thread. Then turn the housing onto the wall mount bracket and retain the connection with an M4 screw.

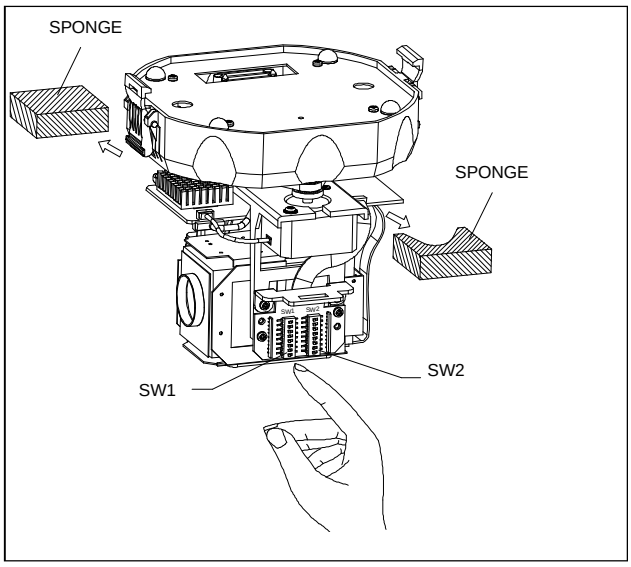
NOTE: Apply silicone to the gap between bracket and wall in the case of outdoor dome.



5 Connect cables

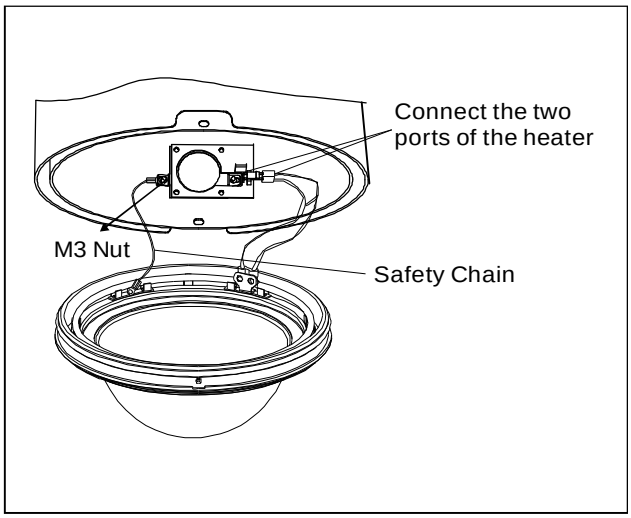
Insert cables into corresponding sockets on power board. After completing cable connection, swing the power board holder back and then turn on the power. The red LED will light up. Turn off the power after checking. If not light up, check the cable connection.

NOTE: There are signs for each port. Please connect cables as picture showed in page 3. Please MAKE SURE power is off before doing connection.



6 Set dome ID, baud rate and protocol

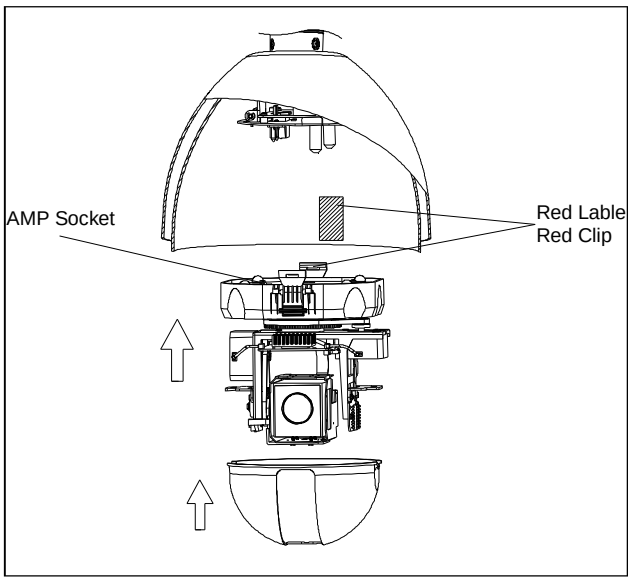
Set dome ID, baud rate and protocol via DIP switches (please refer to APPENDIX I). Remove the two sponges.



7 Down cover preliminary installation

Attach the safety chain with an M3 nut as picture shows. The safety chain prevents the down cover from dropping down.

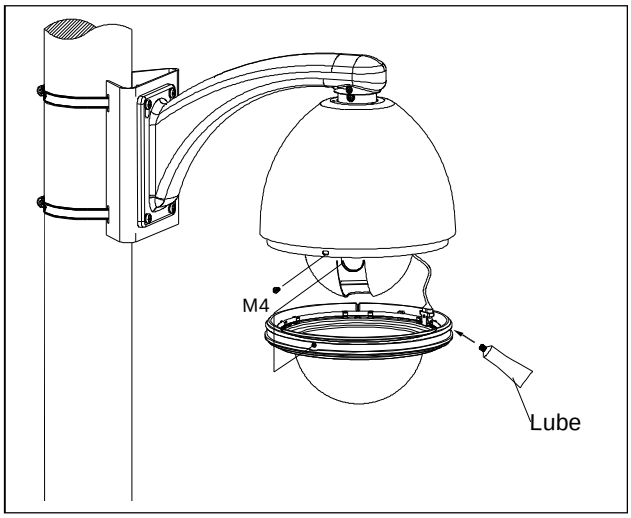
NOTE:Connect the heater plug into the socket in the case of outdoor dome.



8 Install black liner and Pan/Tilt Module

Push the black liner into the two locking tabs. Align the pan/tilt module to the two clips, red to red, black to black and match the holes in pan/tilt module and the two guide poles. Gently push the module upward until you hear two click sound.

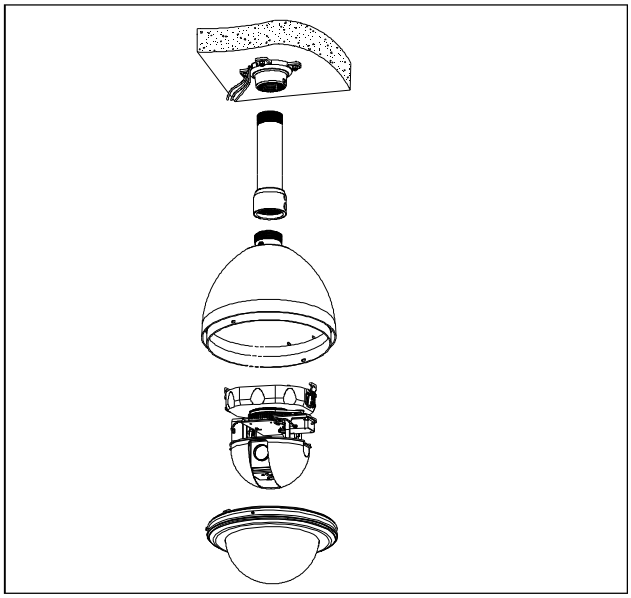
NOTE: Be sure the AMP sockets are clean without dust. DO NOT forget to remove the lens cover.



9 Install down cover

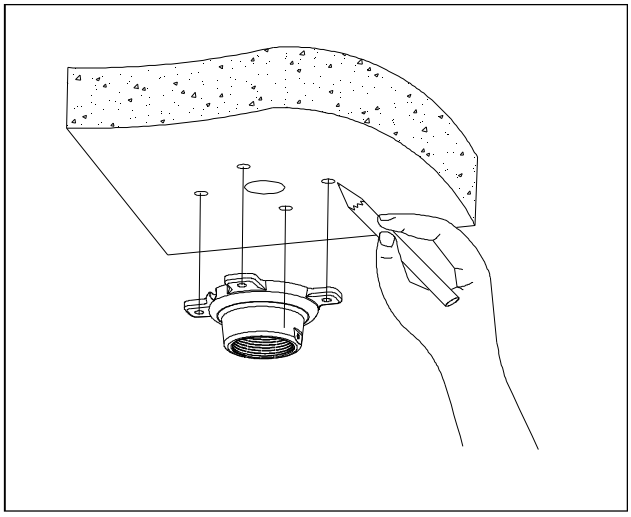
Loosen the two M4 screws on down cover ring. Apply lubricant to the O-ring to make down cover easier to slip in. Push upward the down cover into the housing and then fasten down cover with two M4 screws.

Pendant Mount



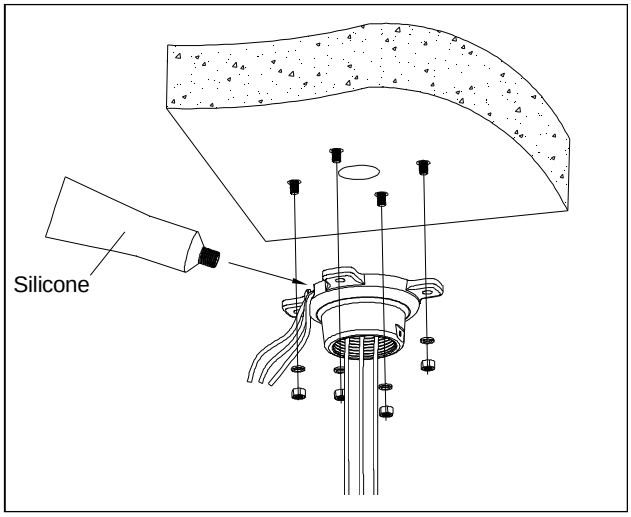
Installation requirements:

The ceiling must be firm enough to bear 4 times the weight of the speed dome.



1 Mark screws positions

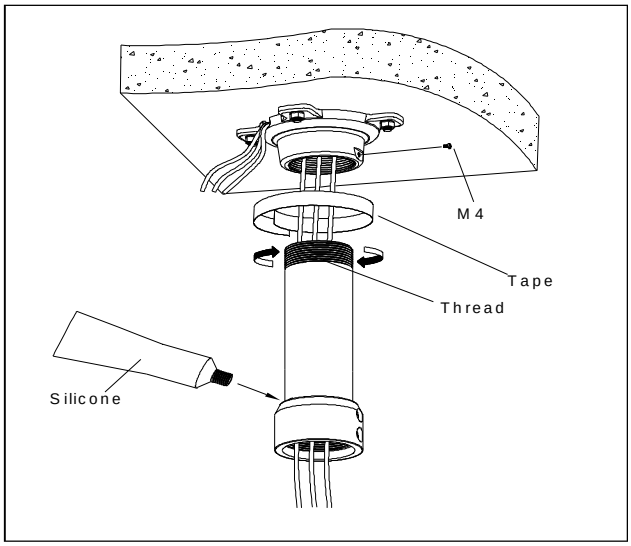
Take the bracket base as the template to mark the screws positions on ceiling. Drill the holes and put expansion screws inside.



2 Install base

Put Power/RS485/Video cables through the central hole of the bracket base, and then fix it on the ceiling.

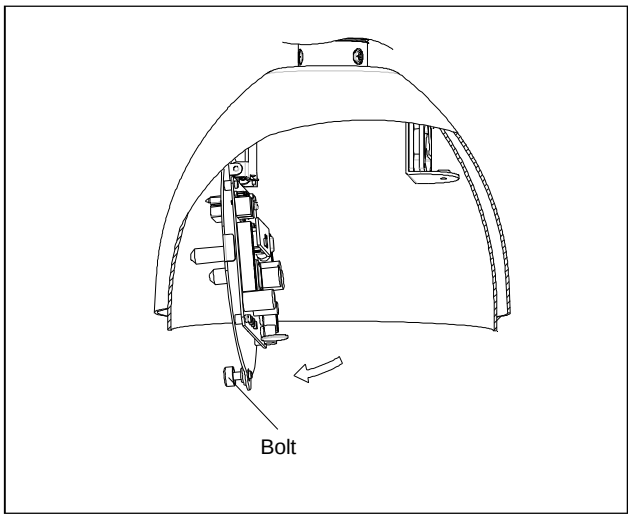
NOTE: Apply silicone along the top of bracket base in the case of outdoor dome.



3 Install suspender

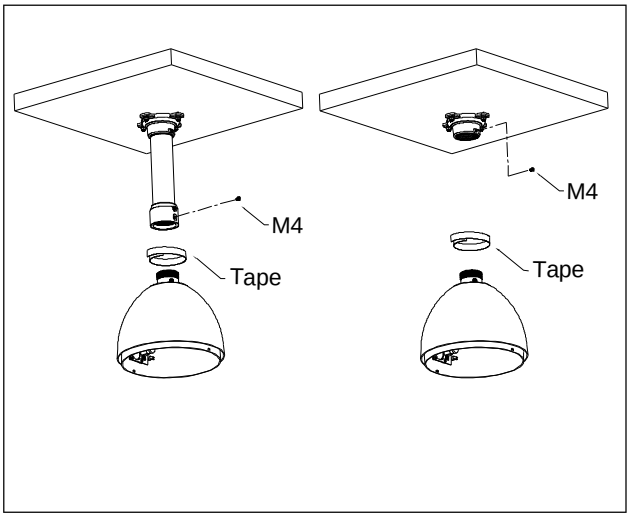
Put cables through the cavity of suspender. Apply water-proof tape to the thread. Then turn the thread pipe head into the bracket base and fasten the connection with an M4 screw.

NOTE: Apply silicone to the suspender as picture shows in the case of outdoor dome.



4 Unfasten the power board holder

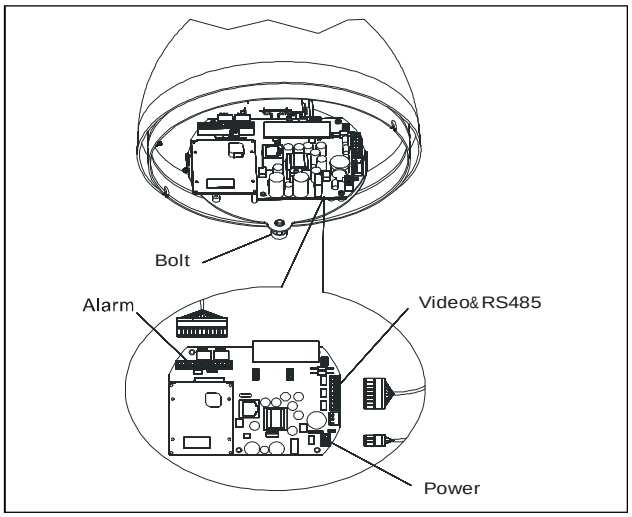
Loosen the bolt and swing away the power board holder.



5 Install housing

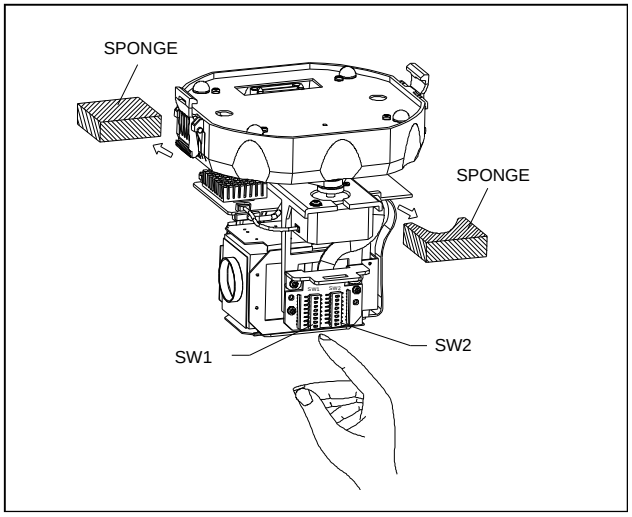
Insert cables through the hole at the top of the housing Apply water-proof tape to the housing thread. Then turn the housing onto the wall mount bracket and retain the connection with an M4 screw. If installation height is not high enough, mount housing directly into the base.

NOTE: Apply silicone to the gap between bracket and wall in the case of outdoor dome.



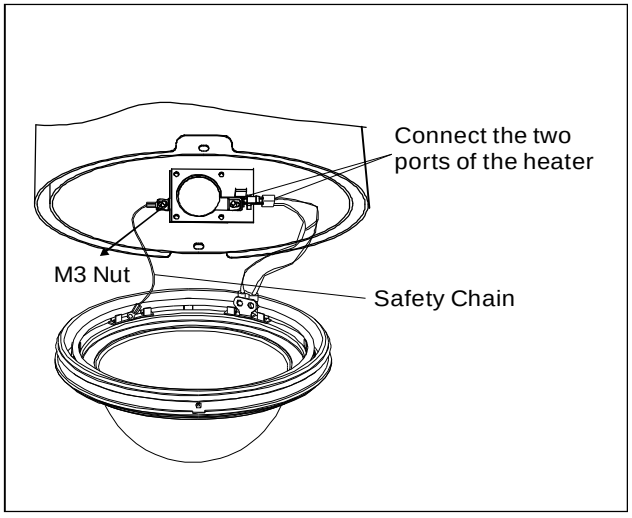
6 Connect cables

Insert cables into corresponding sockets on power board. After completing cable connection, swing the power board holder back and then turn on the power. The red LED will light up. Turn off the power after checking. If not light up, check the cable connection.
NOTE: There are signs for each port. Please connect cables as picture showed in page 3. Please MAKE SURE power is off before doing connection.



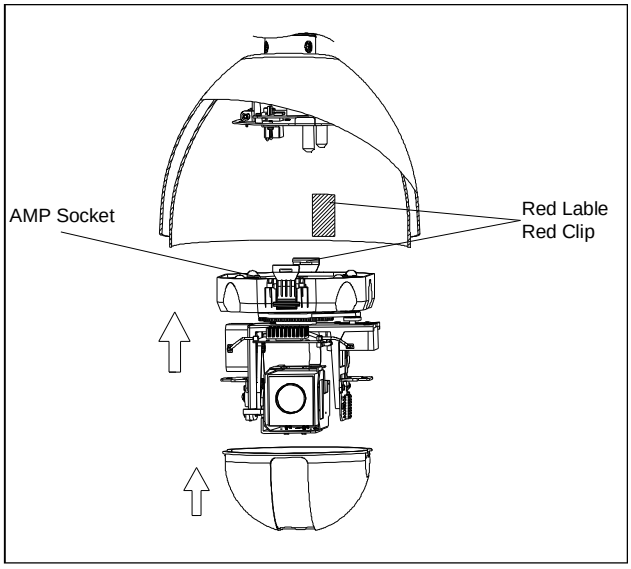
7 Set dome ID, baud rate and protocol

Set dome ID, baud rate and protocol via DIP switches (please refer to APPENDIX I). Remove the two sponges.



8 Down cover preliminary installation

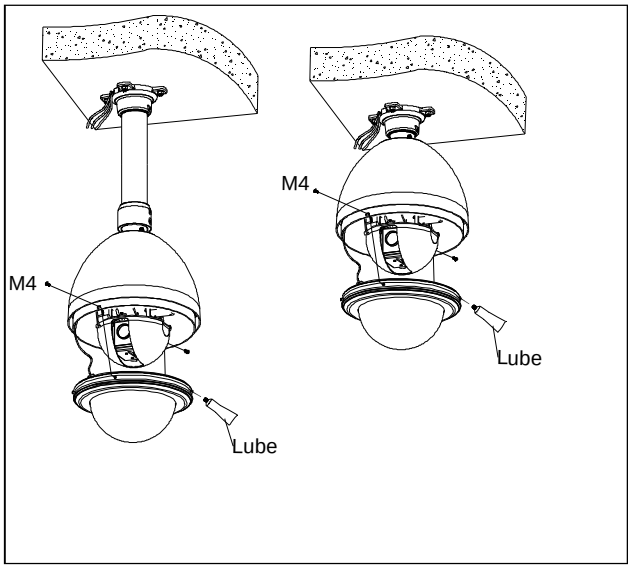
Attach the safety chain with an M3 nut as picture shows. The safety chain prevents the down cover from dropping down.
NOTE:Connect the heater plug into the socket in the case of outdoor dome.



9 Install black liner and Pan/Tilt Module.

Push the black liner into the two locking tabs. Align the pan/tilt module to the two clips, red to red, black to black and match the holes in pan/tilt module and the two guide poles. Gently push the module upward until you hear two click sound.

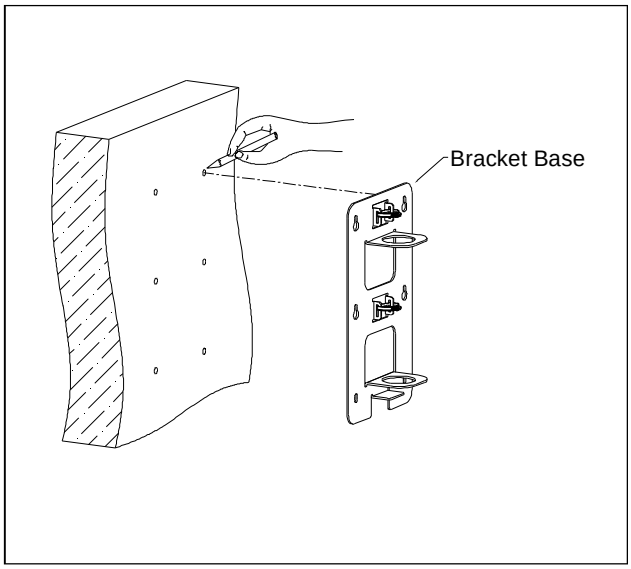
NOTE: BE SURE the AMP sockets are clean without dust. DO NOT forget to remove the lens cover.



10 Install down cover

Loosen the two M4 screws on down cover ring. Apply lubricant to the O-ring to make down cover easier to slip in. Push upward the down cover into the housing and then fasten down cover with two M4 screws.

Parapet Mount

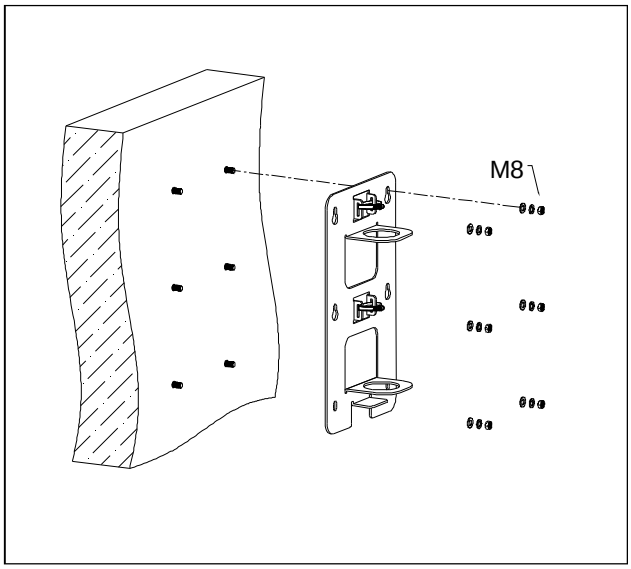


Installation Requirements:

The wall mounting surface must be firm enough to bear 4 times the weight of the speed dome.

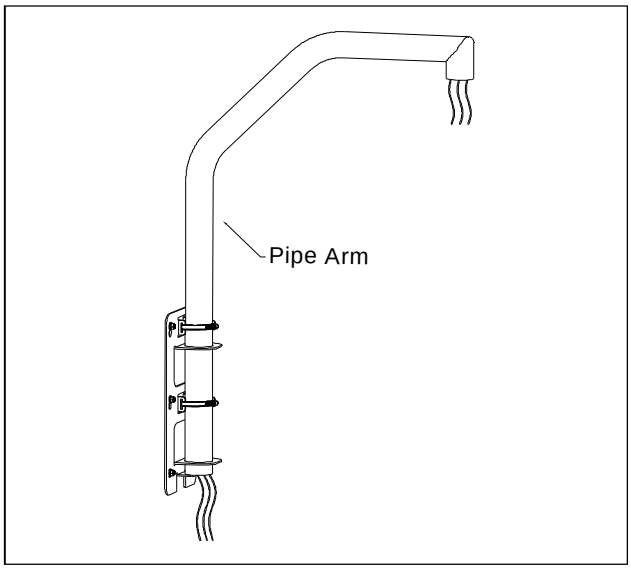
1 Mark Screws Positions

Take the bracket base as the template to mark the screws positions on the wall, and then drill the holes.



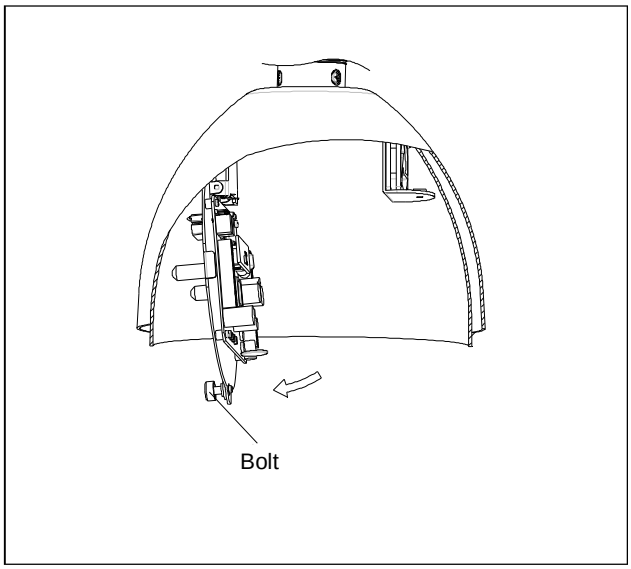
2 Install Base

Fix the bracket base on the wall with the M8 expansive screws.



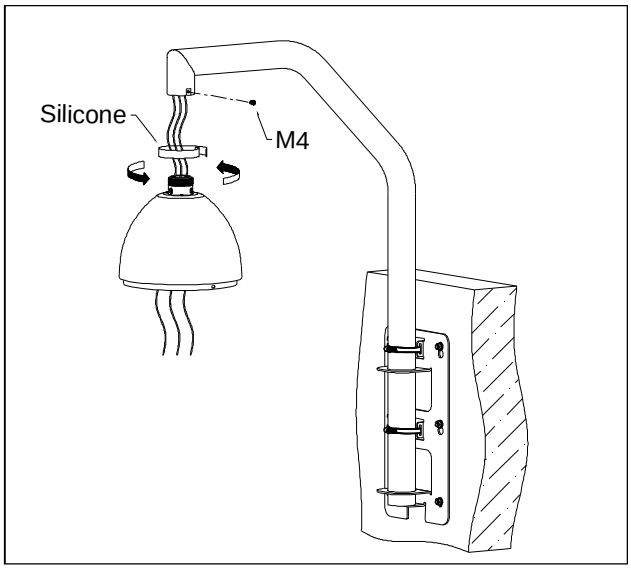
3 Install Pipe Arm

Put the cables through the two trays of the base and pipe arm, and plug the pipe arm into two trays



4 Unfasten the power board holder

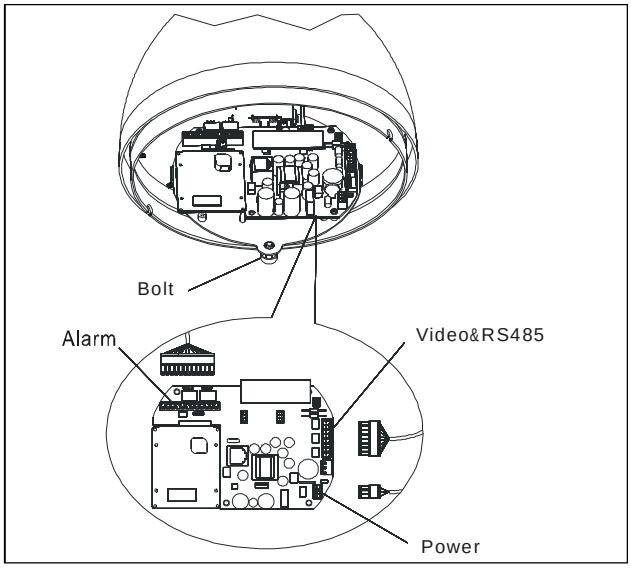
Loosen the bolt and swing away the power board holder.



5 Install the Housing

Insert cables through the hole at the top of the housing Apply water-proof tape to the housing thread. Then turn the housing onto the wall mount bracket and retain the connection with an M4 screw.

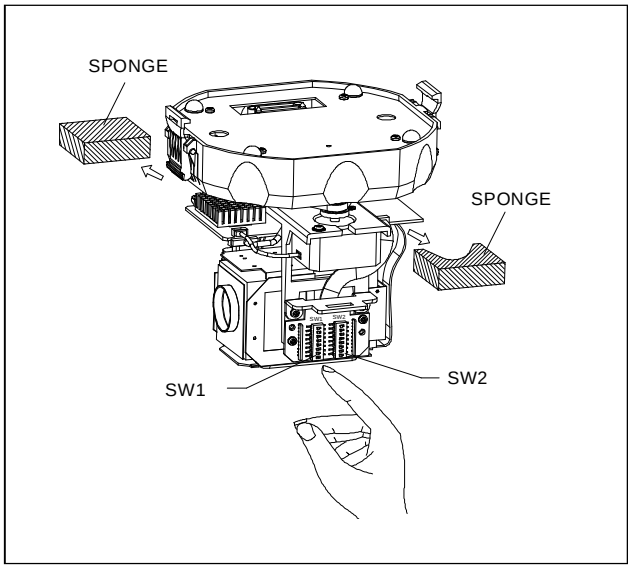
NOTE: Apply silicone to the gap between bracket and wall in the case of outdoor dome.



6 Connect cables

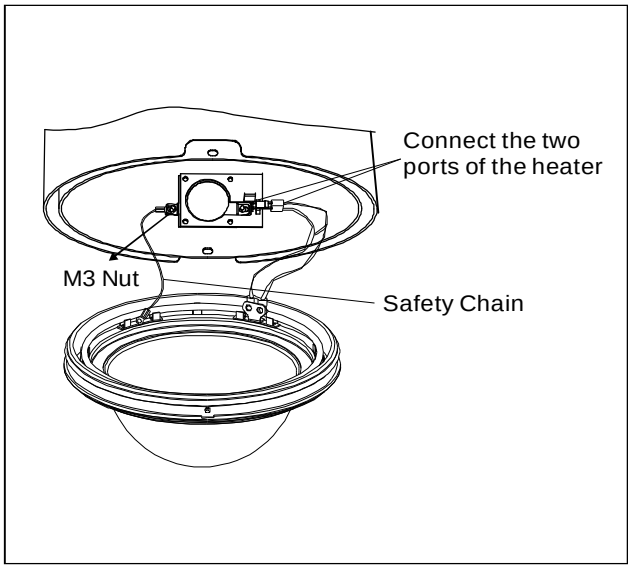
Insert cables into corresponding sockets on power board. After completing cable connection, swing the power board holder back and then turn on the power. The red LED will light up. Turn off the power after checking. If not light up, check the cable connection.

NOTE: There are signs for each port. Please connect cables as picture showed in page 3. Please MAKE SURE power is off before doing connection.



7 Set Dome ID, Baud Rate and Protocol

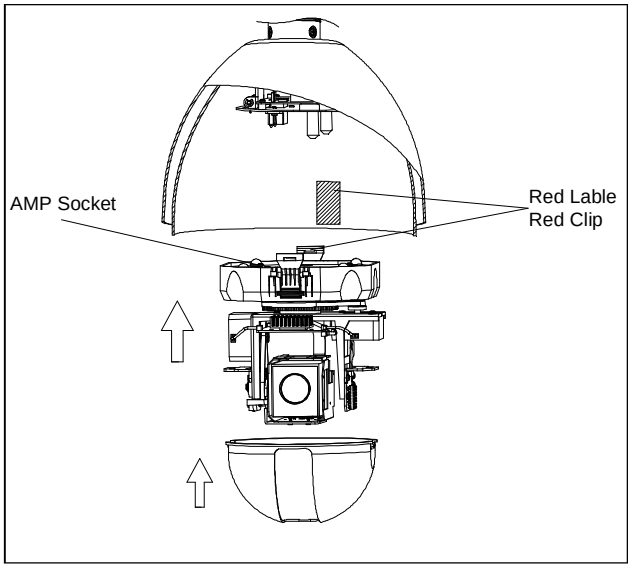
Set dome ID, baud rate and protocol via DIP switches (please refer to APPENDIX I). Remove the two sponges.



8 Down cover preliminary installation.

Attach the safety chain with an M3 nut as picture shows. The safety chain prevents the down cover from dropping down.

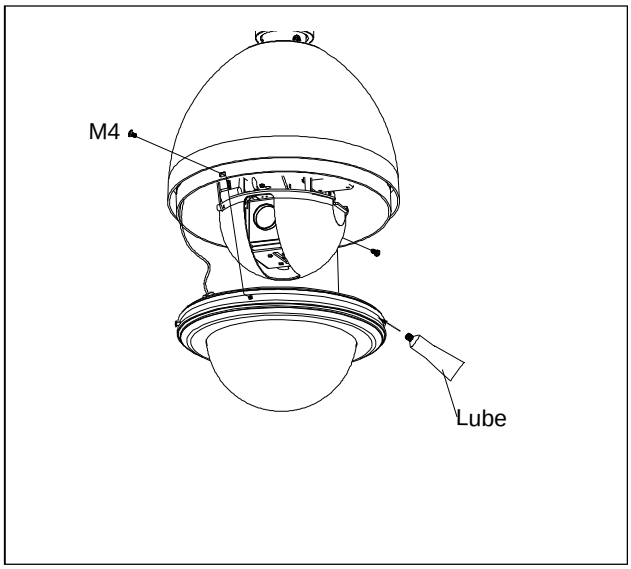
NOTE: Connect the heater plug into the socket in the case of outdoor dome.



9 Install black liner and Pan/Tilt Module.

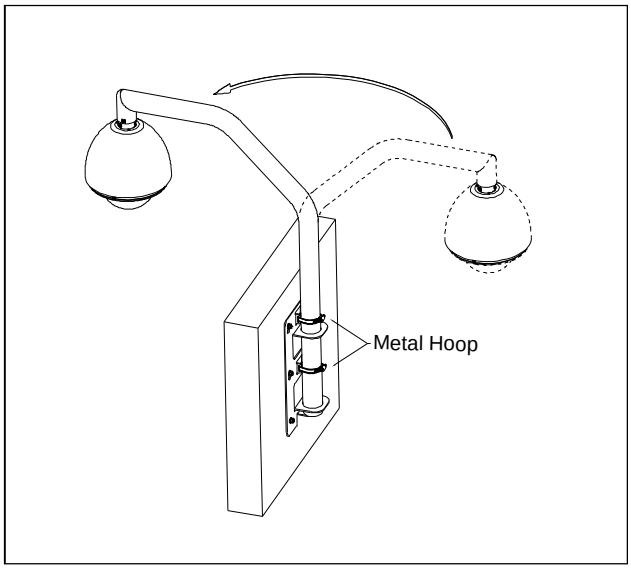
Push the black liner into the two locking tabs. Align the pan/tilt module to the two clips, red to red, black to black and match the holes in pan/tilt module and the two guide poles. Gently push the module upward until you hear two click sound.

NOTE: Be sure the AMP sockets are clean without dust. DO NOT forget to remove the lens cover.



10 Install down cover.

Loosen the two M4 screw on down cover ring. Apply lubricant to the O-ring to make down cover easier to slip in. Push upward the down cover into the housing and then fasten down cover with two M4 screws.



11 Fix the Pipe Arm

Rotate the pipe arm to the proper place, fix the pipe arm to the base with the two metal hoops.

Operation

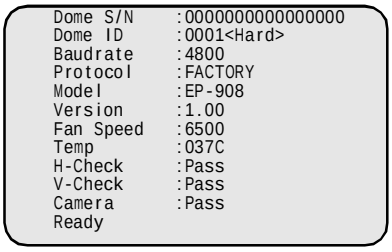
A. Operation Instruction

Two methods are available for carrying out the operation by the system controller.

1. Press the combined hot keys to operate different functions. Please refer to the system controller manual for the detailed commands.
2. Access the OSD menu and operate according to the following instruction.

Initial Information

When you turn on the power for the dome or restart it , the self-test function is begun, and as it finishes,the initial information below will be displayed on the screen . Meanwhile this information is disappeared after receiving the first effective command.



Dome S/N: The dome's serial number

Dome ID: The dome ID address set by DIP switch or keyboard.

Baudrate: Baud rate for dome control bus.

Protocol: The dome's controlling protocol. (please refer to appendix I for more details)

Model: The dome model number.

Fan Speed: The speed of current running fan caculated by rounds per minute.

Temp: The dome inside tempertature. Unit C or F

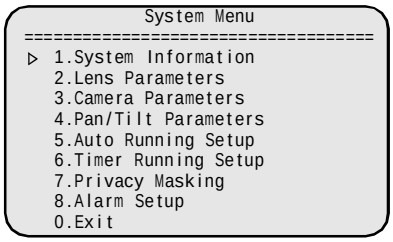
Accessing the System Menu

- Access the dome's main system menu on your monitor by calling preset 95 once or calling preset 1 twice within 5 seconds.

Note: The way to call a preset may vary among keyboards with different manufactures. Please read those manuals to learn keyboard operation.

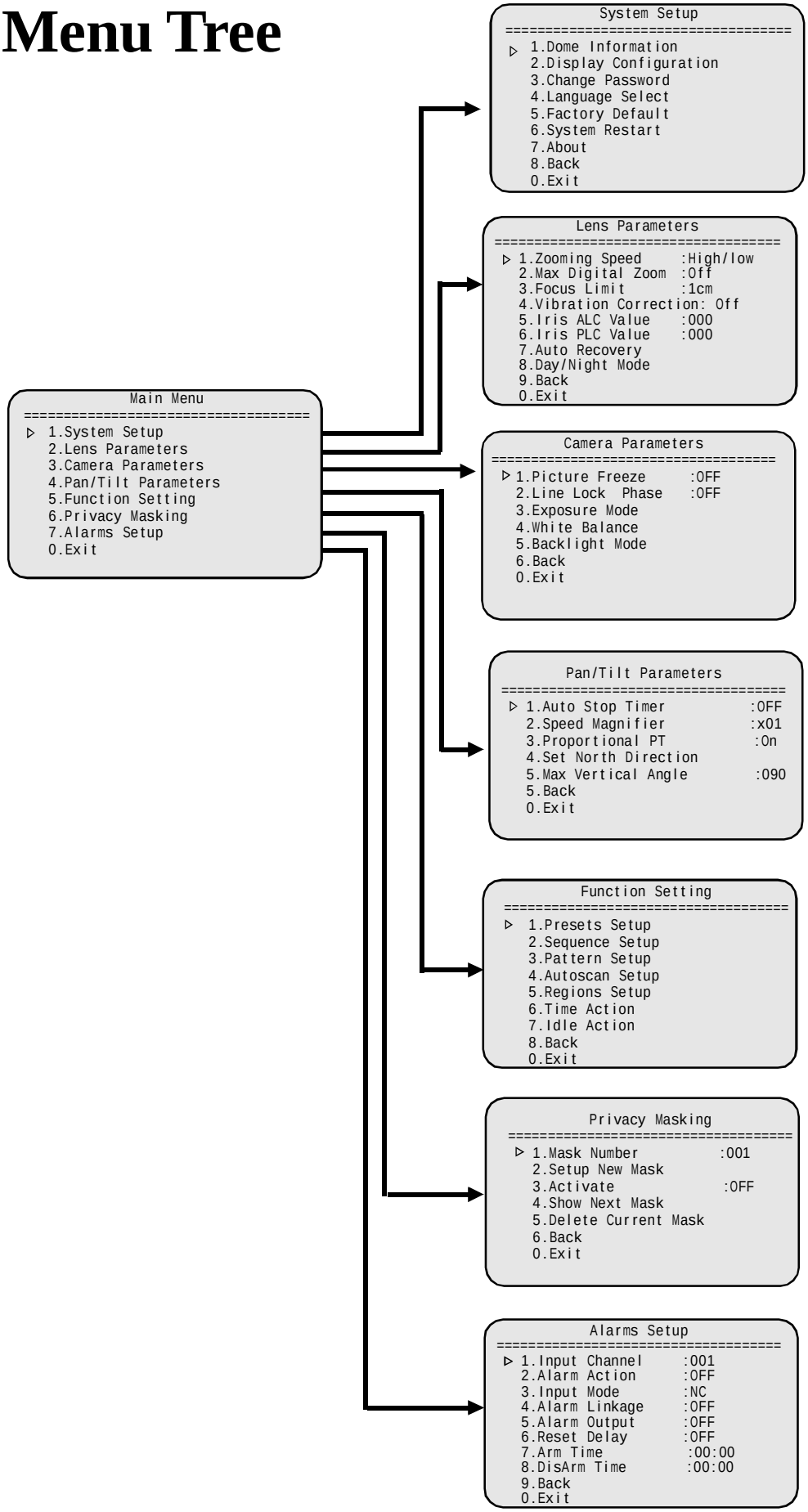
- When there is password protection, user needs to input the correct 6-bit password to access to the OSD menu. (Default password is 000000).
- To input the password, move the joystick up or down to select number (0-9), move the joystick left or right to choose password digit. If the input password is wrong, the password input window will close.

Note: You still can control the dome with a wrong password, but can not access to the OSD menu.



The opened menu will disappear automatically without receiving any operation command in 1 minute. All the settings will be saved automatically to protect against power cuts.

B. Menu Tree


Main Menu
1.System Setup
2.Lens Parameters
3.Camera Parameters
4.Pan/Tilt Parameters
5.Function Setting
6.Privacy Masking
7.Alarms Setup
0.Exit
System Setup
1.Dome Information
2.Display Configuration
3.Change Password
4.Language Select
5.Factory Default
6.System Restart
7.About
8.Back
0.Exit
Lens Parameters
1.Zooming Speed :High/low
2.Max Digital Zoom :Off
3.Focus Limit :1cm
4.Vibration Correction: Off
5.Iris ALC Value :000
6.Iris PLC Value :000
7.Auto Recovery
8.Day/Night Mode
9.Back
0.Exit
Camera Parameters
1.Picture Freeze :OFF
2.Line Lock Phase :OFF
3.Exposure Mode
4.White Balance
5.Backlight Mode
6.Back
0.Exit
Pan/Tilt Parameters
1.Auto Stop Timer :OFF
2.Speed Magnifier :x01
3.Proportional PT :On
4.Set North Direction
5.Max Vertical Angle :090
5.Back
0.Exit
Function Setting
1.Presets Setup
2.Sequence Setup
3.Pattern Setup
4.Autoscan Setup
5.Regions Setup
6.Time Action
7.Idle Action
8.Back
0.Exit
Privacy Masking
1.Mask Number :001
2.Setup New Mask
3.Activate :OFF
4.Show Next Mask
5.Delete Current Mask
6.Back
0.Exit
Alarms Setup
1.Input Channel :001
2.Alarm Action :OFF
3.Input Mode :NC
4.Alarm Linkage :OFF
5.Alarm Output :OFF
6.Reset Delay :OFF
7.Arm Time :00:00
8.DisArm Time :00:00
9.Back
0.Exit

C. Menu Operation

Selecting item

- In the main menu, the cursor flashes on the left, tilt the joystick up or down to move the cursor to the desired setting item. Move the joystick to right to select the item.
- Select an item to ① access its sub-menu or ② run a specific function or ③ change its value or ④ edit its title.

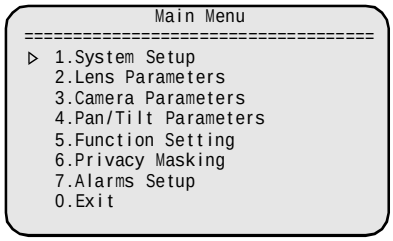
Changing values

Move the joystick up or down to change the value, move the joystick tothe left to save the setting and then exit. In the case of more than one value, move the joystick to the left or right to select different position, and then move it up or down to change value, finally move the joystick to the leftmost to save the setting and then exit.

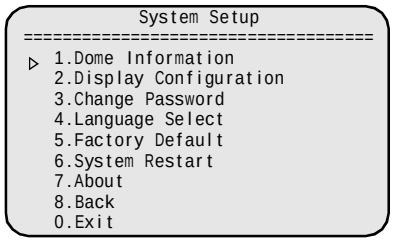
Note: To increase the value of the selected field, hold the joystick on up or down position for more than 10 seconds.

For example: In order to change the password, please follow these steps.

1. Press 9 + 5 nemeric buttons and PRESET button, or press the 1 numeric button and PRESET button twice within five seconds to enter main



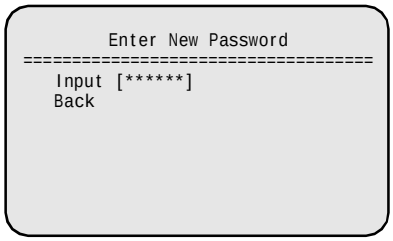
2. Move the joystick down to make the cursor point to System Information then move the joystick to the right to select it.



3. Move the joystick down to select Change Password

Note: Here-in-after menu paths are written in the following format:

Main menu à System Setup à Change Password

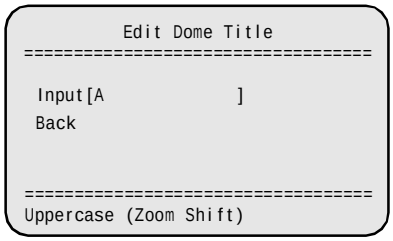


4. Input the old password and new password, Default password is 000000. Move the joystick to left or right to different position; Move it up or down to change a number. After inputting a new password,move the cursor to leftmost index position.
5. Select "**3. Confirm**" to confirm the new password. System will indicate "**Old Password error**" or " **Pwd Modify Success**".

Editing titles

Access Dome Title Edit Menu following the path:

System setup → Dome Information → Title → Input



Move the cursor to left or right to select a character, move it down to edit the blinking character. Zoom In/ out to switch character groups:

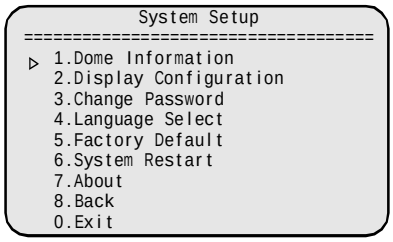
Number [0 1 2 3 4 5 6 7 8 9]
Capital ↕ [A B C]
Lowercast ↕ [a b c]
Sign [/ + - （ ） & % # ! $]
Special char [á í ó ẅ é]

Move the joystick to desired character,and then move it up to select or down to cancel.

Note: Pressthe 1 numeric button and PRESET button to switch between Modify and Insert editting method.

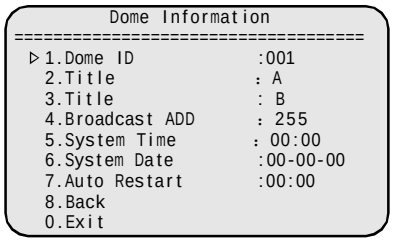
1. System Setup

Main menu **à** System Setup



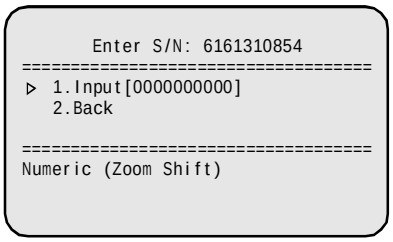
1.1 Dome Information

Main menu **à** System Setup **à** Dome Information



1. Dome ID: Dome ID shows the current dome's ID number. Each dome has its unique ID ranging from **001 to 255** (255 is default broadcast ID). The Dome ID can be set only when DIP switch is in Programmable ID mode.

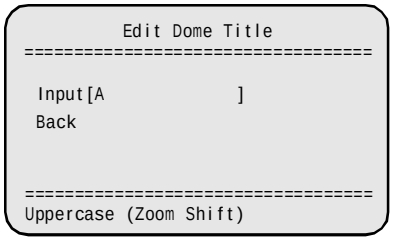
1.1 Move the cursor to select Dome ID ,and then move it to right. The following picture will be displayed on the screen.



1.2 Move the joystick to select input,and then enter number in accordance with above S/N number.

1.3 Move the joystick up or down to change the value and then move it to left to save the setting.

2.Dome Title: There are two titles. Each one has a maximum of 20 characters consisting of English(Chinese), numbers,and special characters .
The name is useful to identify which dome it is. You can edit dome title refer to page 36.



3.Dome Title: Sets the second 10 characters of the title. Repeat the step 2 to complete the Title setting.

4. Broadcast ADD: It sets broadcast.
ID number (001~255). The ID number should be different from any other dome, default setting is 255.
When a command is sent to broadcast ID, all the domes connected to the control bus accept the command. Please refer to page 48 to get information about ID setting.

5.System Time: Set the system time in order to show the time on the screen and enable timer scheduled functions. Display format: **hour : min**

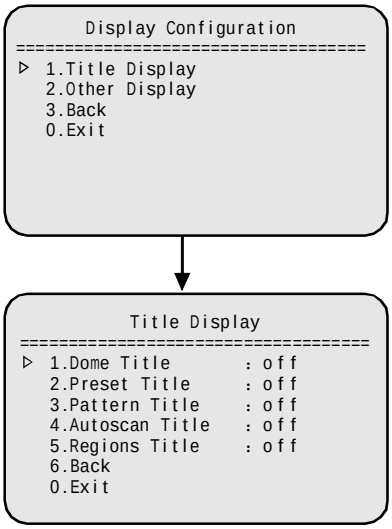
6.System Date: Set the system date in order to show the date of displaying on the screen. The default format is DD-MM-YY.
Note: The display format of system date cannot be changed, users can change the date itself only.

7.Auto Restart: Set the auto restart time in order to make the dome restart at a perticular time.
Note: When auto restart time is 00:00, this function is in the default state, which is closed.

8.Back: Return to previvous menu.

1.2 Display Configuration

Main Menu à System Setup à Display Configuration



1.2.1 Title Display

This allows you to program how titles are display on the monitor.The following titles can be set:

Dome Title (ON,OFF,2s-60s): Displays the dome title.

Presets Title (ON, OFF, 2s-60s) :Displays preset title when calling up the preset.

Pattern Title (ON, OFF, 2s-60s):Shows the pattern title when running the pattern.

Autoscan Title (ON, OFF, 2s-60s) :Shows the title during automatic scanning operation.

Regions Title (ON, OFF, 2s-60s) :Displays the region title for the region mode settings.

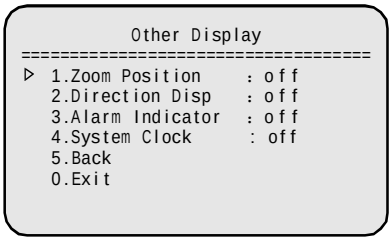
The following settings are available for each title:

OFF: The title is not displayed when enabled.

ON: The title is displayed after activation.

2s-60s: The title is displayed within a range of two seconds to sixty seconds after activation.

1.2.2 Other Display



Zoom Position (ON, OFF, 2s-60s): Displays time of the zoom times.

Direction Disp (ON, OFF, 2s-60s): Displays time of camera pointing direction.

Alarm Indicator (ON/OFF): Displays the alarm state information.

System Clock (ON/OFF) :Display the system time.

Select **BACK** to return to the previous menu.

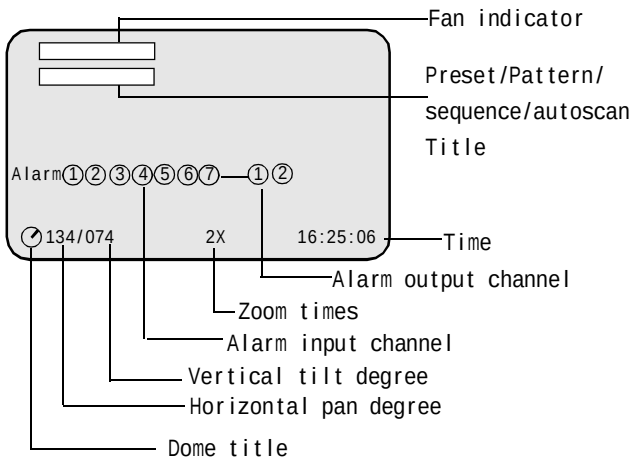
The following settings are available for each one:

OFF: This function is disabled.

ON: This function is enabled.

2s-60s: The function is displayed within a range of two seconds to sixty seconds after activation.

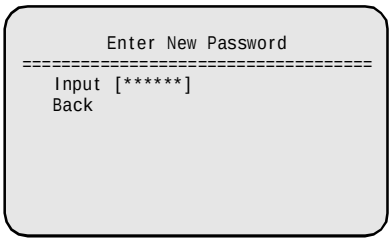
ı Information Text Position



1.3 Change Password

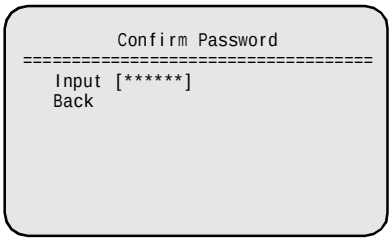
Main menu à System Setup à Change Password

1.Select “Change Password”,and then move the joystick lever to right.The following picture will be displayed on the screen.



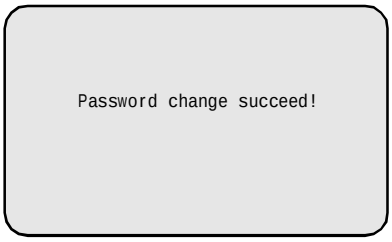
2 Input the new password,firstly move the joystick lever to up or down to change the value, and then move it to left or right to a different position.

3 Select “Back”,and move the joystick lever to left. The following picture will be displayed on the screen.

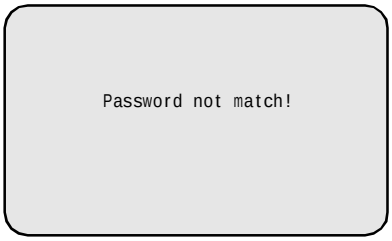


4 Enter the new password again in the same way ,and then move the joystick lever to left.

5 Select “Back”, the following pictures will pop out the screen if the password is input correctly.



6.If the password is not input correctly,the following picture will be displayed. Thus it is necessary to enter again in the same way, otherwise you can not access to OSD menu.

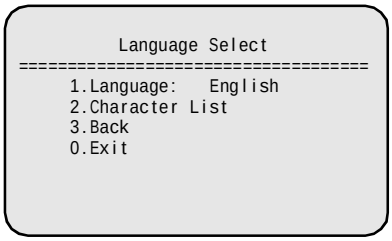


7. If the old password is input worngly,the following picture is on the screen.The screen menu is cleared automatically.

Note: If the default password is changed ,the password protection is activated.It is requirement to enter the password whenever you want to access the OSD menu.

1.4 Language Select

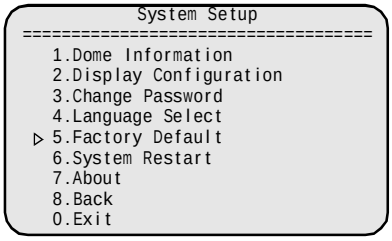
Main menu à System Setup à Language Select



There are five languages available: English,Chinese, Espanol, Italtano,Deutsch.

1.5 Factory Default

Main menu à System Setup à Factory Default



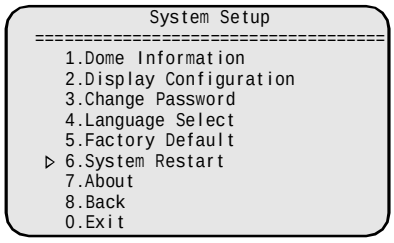
Select **Factory Default** to restore factory default settings. System will request password to set it. Factory default will not change dome ID.

List of Default Setting

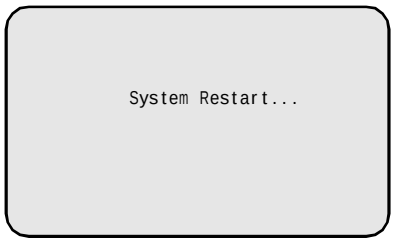
Zooming Speed	HIGH	White Balance	Auto
Digital Zoom	x10	Focus Min Limit	30CM
Joystick Auto	Both	Idle Time	30S
Auto Focus	5S	Auto action	Off
Auto Iris	5S	Alarm Mode	Manual
Iris ALC	084	Set Alarm	Armoff
Iris PLC	016	Input State	NC
Day Night Mode	Auto	Run Function	Off
Sensitivity	1/1.5	Alarm Output	Off
Preset Freeze	Off	Reset Delay	20S

1.6 System Restart

Main menu **à** System Setup **à** System Restart

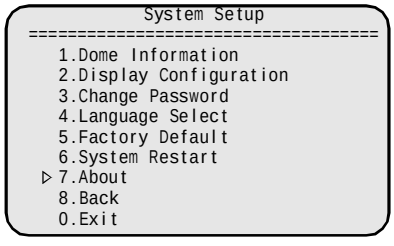


Move the joystick lever to select System Restart,the following picture will display on the screen.Settings will not change after restarting.

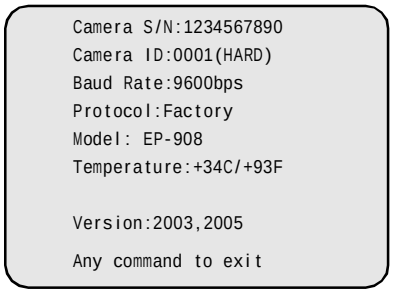


1.7 About

Main menu **à** System Setup **à** About



- Select ABOUT to display information.
- Select BACK to return to the previous menu.

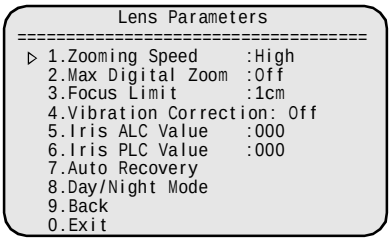


This menu screen can not be changed or altered.It is provided for information purposes only.

NOTE: The menu screen is cleared automatically as any command is carried out.

2. Lens Parameters

Main menu à Lens Parameters



2.1 Zooming Speed

To set the zoom speed level to **High** or **Low.**

2.2 Max Digital Zoom

Max Digital zoom magnifies the picture by duplicating pixels. The picture is enlarged but the resolution remains the same. This menu item sets max. digital zoom magnification times.

OFF : Turn off digital zoom

X1-~ X10 : Max. digital zoom times

Different camera has different Max. digital zoom times.

2.3 Focus Limit

The focus limit sets the minimum distance between the object and the camera. Focus is not achieved if the distance is less than the current setting. Eg: This function can prevent the camera from focusing raindrops and water vapor of the down cover in the rain day.The following values for focus limit are available:1cm.10cm,30cm,100cm

2.4 Vibration Correction(Some camera only)

This prevents the image from intensively vibration as vehicles frequently passed.

2.5 Iris ALC Value(Some camera only)

This sets the iris average level control value. The value ranges from 000 to 255.

Default value: 22X color camera: 066, 23X color/ mono camera: 084 (different camera has different ALC default value)

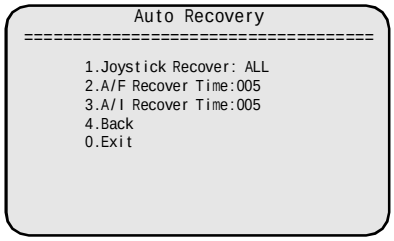
Note: Changing default value is strongly **NOT** recommended.

2.6 Iris PLC Value(Some camera only)

This sets the iris peak level control value. The value ranges from 000 to 127.Default value: 23X color/ mono camera: 016 (different camera has different PLC default value)

Note: Changing default value is strongly **NOT** recommended.

2.7 Auto Recovery



This lets you set whether operation returns to automatic focus and automatic iris if manual focus and manual iris are being used.The options are as follows:

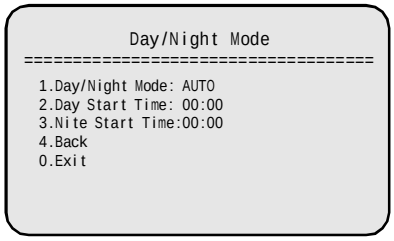
All : Both auto focus and auto iris are restored. (default setting)

Focus : Auto focus is restored only.

Iris: auto iris is restored only.

None : Neither is restored or not.

2.8 Day/Night Mode



The Day/Night mode automatically switches between color and monochrome mode in accordance with the environment illumination. Color mode is suitable to work in daytime,while mono mode is suitable to work at night in low illumination environment but the video is black and white.

Auto: The dome will automatically change modes in accordance with the environment illumination.

Day: The dome is always in colorful mode.

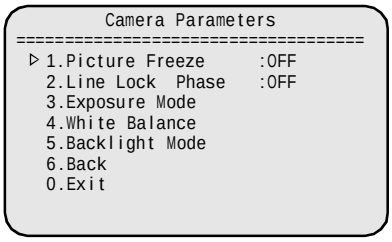
Night: The dome is always in monochrome mode.

Time: Set schedule for mode change.

Note: You need to set exposure mode to Auto in order to get Auto Day/Night mode.

3. Camera Parameters

Main menu à Camera Parameters



3.1 Picture Freeze

There are two selections: ON and OFF.

ON: The current image is frozen.

OFF: This function is void.

Note: This feature is to reduce useless data traffic in web application and save storage space for DVR.

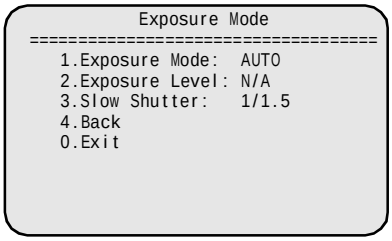
3.2 Line Lock Phase

The following selections are available:

OFF:This function is void.

001-360: It lets you choose the suitable phase to obtain synchronous video.

3.3 Exposure Mode



Set the exposure mode. The value options are: **Auto, Shutter, Iris and AGC.**

Shutter:

Set Shutter speed in priority, available: settings are 1/1.5, 1/3, 1/6, 1/12, 1/25, 1/100, 1/150, 1/ 250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/ 30000

Iris:

Set Iris in priority. Values are: F1.6, F2.2, F3.2, F4.4, F6.4, F8.8, F12, F17, F24, F34

AGC:

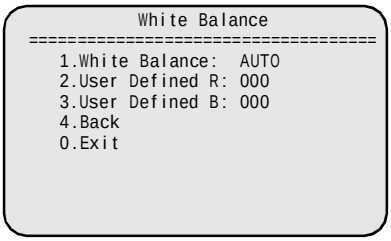
Set Auto gain control in priority. Values are: 0dB, 6dB,12dB,18dB,24dB,30dB. Higher dB value makes image brighter.

Note: Day/Night auto mode and Sensitivity Up will be void if Exposure mode is not Auto mode.

Only one of settings for Shutter, Iris and AGC will take effect

Mode	Shutter	Iris	AGC
Auto	N/A	N/A	N/A
Shutter	1/1.5、1/3、1/6、1/12、1/25、1/50、1/100、1/150、1/250、1/500、1/1000、1/2000、1/4000、1/10000、1/30000	N/A	N/A
Iris	N/A	F1.6、F2.2、F3.2、F4.4、F6.4、F8.8、F12、F17、F24、F34	N/A
AGC	N/A	N/A	0dB、6dB、12dB、18dB、24dB、30dB

3.4 White Balance

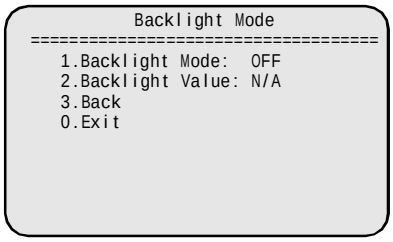


White balance: The adjustment is carried out in two ways: Auto or User

User Defined R: It sets the white balance R value, ranging from 000 to 255.The higher the number, the stronger is the red component.

User Defined B:It sets the white balance B value, ranging from 000 to 255.The higher the number, the stronger is the blue component.

3.5 Backlight Mode



This sets backlight compensation.
If the backlight is bright, the objects in the center of the picture may be dark. The dome can automatically adjust the brightness of the whole image according to the brightness of center point.

Therefore backlight compensation can increase the brightness of the objects in the center.

OFF: This function is not carried out.

Normal: Standard BLC mode.

WDR: Wide Dynamic Rage mode.

NOTE: This function is used for the cameras supporting WDR

As the backlight mode is setting in the standard **Normal** or **WDR** mode, different backlight compensation grade can be set as follows:

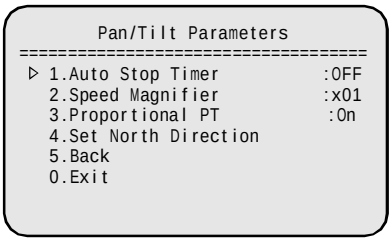
000 This function is not carried out.

001-255 Choose different backlight compensation grade. The higher the number,the brighter is the image.

Mode	Normal	WDR
Off	N/A	N/A
Normal	000-255	N/A
WDR	N/A	000-127

4. Pan/Tilt Parameters

Main menu à Pan/Tilt Parameters



4.1 Auto Stop Timer

For some particular protocols, the dome does not stop moving even if no operation comes form the controller. But this function lets the dome stop at a fixed time you set in advance.

OFF: This function is not carried out. (default setting)

001~100: After value x 50ms the dome will automatically stop moving. For example: 003 means the dome will automatically stop moving after 150ms.

4.2 Speed Magnifier

Some protocols' controlling speed is either faster or slower, however it can be adjusted via Speed magnifier. The selections are as follows:

X1: Original speed (default setting)

↑2 ~ ↑32: Times faster than original speed.

↓2 ~ ↓32: Times slower than original speed.

4.3 Proportional PT

The dome moves at a speed of certain degrees per second. Objects on screen move much faster in telescope than in widescope, even undesirable too faster in some case. This function decreases the dome movement speed while zooming in.

ON : Enable the function (default setting)

OFF: Disable the function

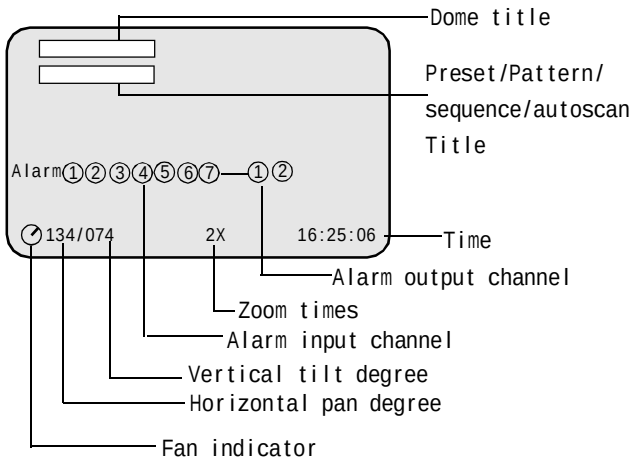
4.4 Max Vertical Angle

For this setup, you can set the max tilt degree of the speed dome. This function is for changing the range of vertical observation, from 75 degrees to 95 degrees, which is the maximum one.

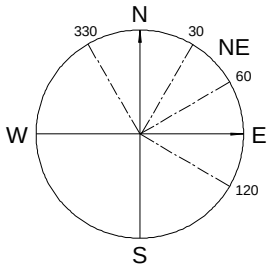
4.5 Set North Direction

User can set dome's orientation on screen by using joystick to position north.Pan degree is the relative degree to a specific direction. That direction is called NORTH.

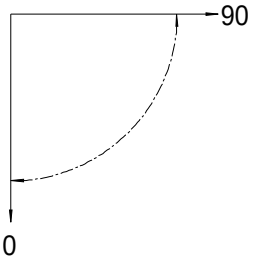
Note: Not restrict to geographical north.



Horizontal 0～360



Vertical 0～90

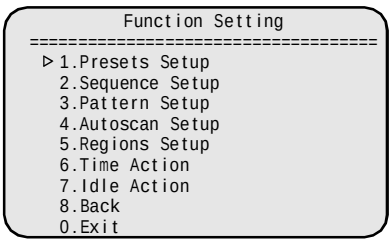


For example

- Move to a position and call preset 1 to confirm.

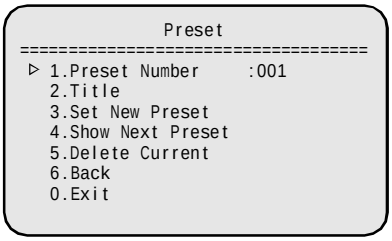
5. Function Setting

Main menu à Function Setting



5.1 Preset Setup

Main menu à Function Setting à Preset setup

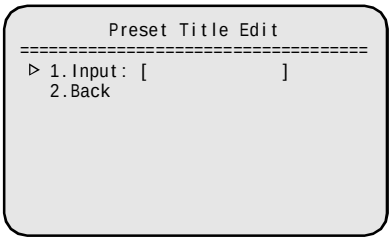


This function allows memorization of the angle, zoom and focus settings for the camera if any location is monitored.

- Up to 220 preset positions can be stored.
- You can press the numeric button and the PRE-SET button of the system controller to access each pre-set position set in advance.

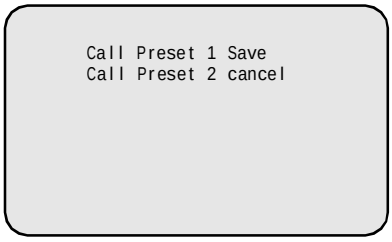
1.Preset Number:It sets the preset number,ranging from 001 to 255.

2.Title: It sets the name for the preset position,which can be displayed on the screen.



Tilt the joystick lever to up or down to change each character,and then tilt it to right to a different position. After inputting,tilt the joystick lever to select Back to exit the setting.

3. Set New Preset: This lets you determine the new preset.The following picture will pop out as you tilt the joystick lever.



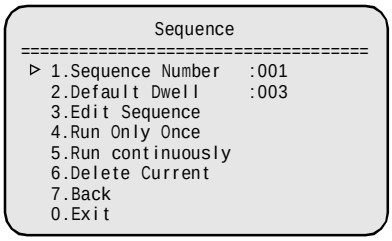
Move to the desired position and zoom to a suitable level, call preset 1 to save the current preset, call preset 2 to cancel.

4.Show Next Preset: It moves to the next position according to the numerical order.

5. Delete Current: The current preset is deleted as you tilt the joystick lever to select it.The following picture will display on the screen.

5.2 Sequence Setup

Main menu à Function Setting à Sequence setup



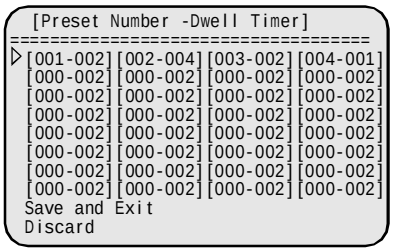
A “sequence” is defined as a sequential moving from preset to preset and pause for a specific time at each preset.

- Up to 4 sequences can be stored.
- Each of them can store 32 presets at maximum.

1.Sequence Number:This sets the sequence number ranging from 1 to 4.

2.Default Dwell: This sets the pause time (1 to 255) for each preset position.

3.Edit Sequence:This sets order and pause time spent at each preset position.It is possible to set 32 positions as shown in the following illustration.



E.g. 003-002 means that preset 003 is accessed and paused for 2 seconds. Move joystick lever to left or right to select editing item, and then move it to up or down to change value.

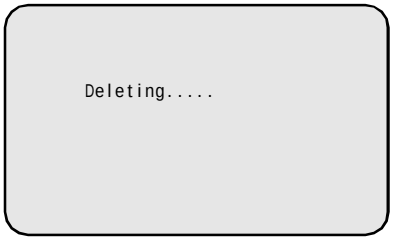
Take the above picture for example, the camera rotates from preset 1 to preset 4 and the pauses time is for 2 seconds, 4 seconds, 2 seconds, 1 second respectively. Select **Save** to save the sequence, select **Discard** to quit without saving.

Note: When a preset's dwell time is set 0, system will skip that preset. System will consider preset 0 as the end of a sequence.

4.Run Only Once: The current sequence is run only once.

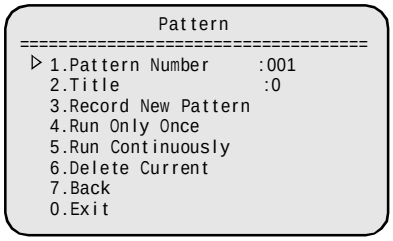
5.Run Continuously: The current sequence is run continuously and the system will loop the sequence.

6. Delete Current: The current sequence is deleted. The following picture is displayed on the screen.



5.3 Pattern Setup

Main Menu à Function Setting à Pattern setup

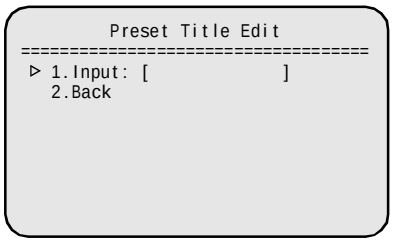


A pattern records a continuous movement of the camera in a period of time. The difference between sequence and pattern is that in a sequence, dome moves from a preset to next at a fixed speed; in a pattern, dome moves flexible curve at various speed.

- Up to four pattern mode can be set.
- Each of them can be set a duration of up to 180 seconds at maximum.

1.Pattern Number:It sets the pattern number ranging from 1 to 4.

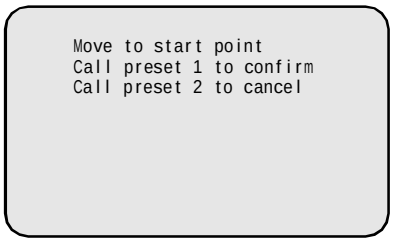
2.Title: It sets the name for the pattern,which can be displayed on the screen.



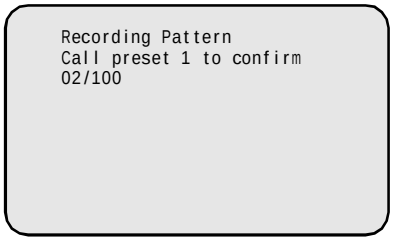
Tilt the joystick lever to up or down to change each character,and then tilt it to right to a different position. After inputing,tilt the joystick lever to select Back to exit the setting.

3. Record New Pattern: This records each commands used for pan,tilt, and zoom operations.

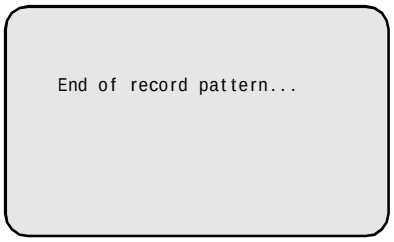
Move the joystick lever at random firstly, and then press the 1 numerical and PRESET button of the system controller to start record.The following picture will display on the screen.



Move the joystick lever to record the zoom operation. Meanwhile the following picture will display on the screen.



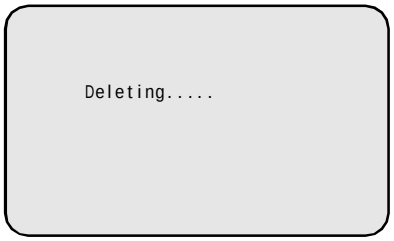
To stop recording,press the 1 numerical button and PRESET button.The following picture will display on the screen.



4.Run Only Once: The current pattern is run only once.

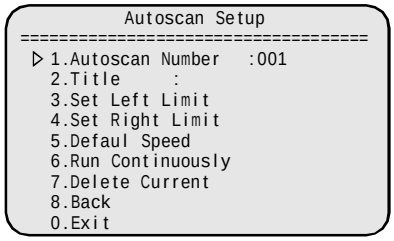
5.Run Continuously: The current pattern is run continuously .

6. Delete Current: The current pattern is deleted. The following picture is displayed on the screen.



5.4 Autoscan Setup

Main menu à Function Setting à Autoscan setup

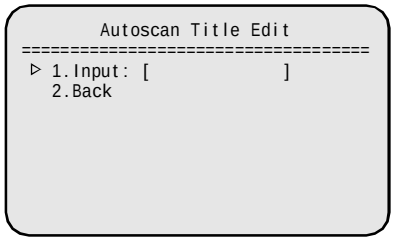


This function allows you to set the left and right edges of the area to be monitored,and the camera can move back and forth between these two points.

- Up to four autoscan modes can be set.
- The speed for autoscan can be set.

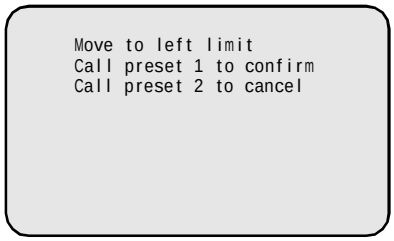
1.Autoscan Number:It sets the autoscan mode number,ranging from 001 to 004.

2.Title: It sets the name for the autoscan mode,which can be displayed on the screen.



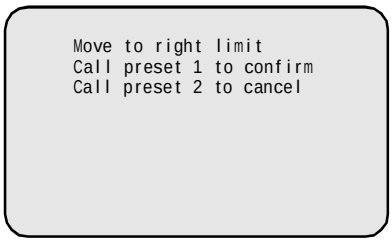
Tilt the joystick lever to up or down to change each character,and then tilt it to right to a different position. After inputting,tilt the joystick lever to select Back to exit the setting.

3.Set Left Limit: This sets the left edge of the area to be scanned.



Move the joystick lever to desire position,and then choose to save and cancel as the above picture indicated.

4.Set Right Limit: This sets the right edge of the area to be scanned.



Move the joystick lever to desire position,and then choose to save and cancel as the above picture indicated.

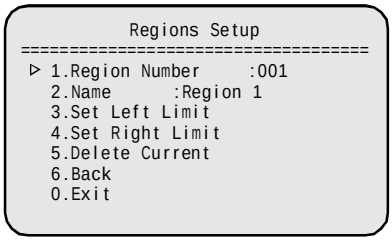
5.Default Speed: This sets the scannig speed ranging from 001 to 255.

6 . **Run Continuously**: The current autoscan mode is run continuously .

7. Delete Current: The current autoscan mode is deleted.The following picture is displayed on the screen.

5.5 Regions Setup

Main menu à Function Setting à Regions Setup

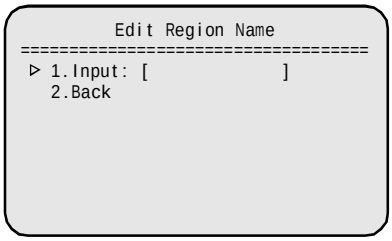


A region is an area between two sites. User can edit a title for a REGION. (E.g. Dangerous area). Whenever the camera moves into the region, the title will display on the screen to alert the user.

l Up to four regions can be set.

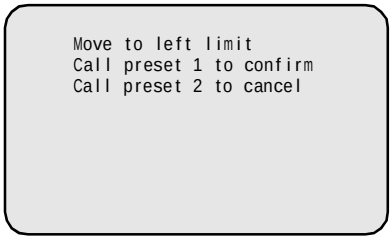
1.Region Number:It sets the autoscan mode number, ranging from 001 to 004.

2.Title: It sets the name for the region,which can be displayed on the screen.



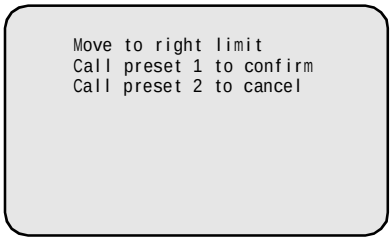
Tilt the joystick lever to up or down to change each character,and then tilt it to right to a different position. After inputting,tilt the joystick lever to select Back to exit the setting.

3.Set Left Limit: This sets the left edge of the region.



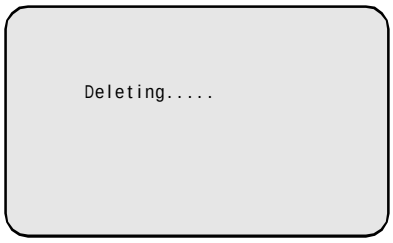
Move the joystick lever to desire position,and then choose to save and cancel as the above picture indicated.

4.Set Right Limit: This sets the right edge of the region.



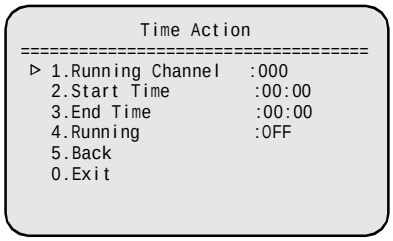
Move the joystick lever to desire position,and then choose to save and cancel as the above picture indicated.

5. Delete Current: The current region is deleted.The following picture is displayed on the screen.



5.6 Time Action

Main menu à Function Setting à Time Action



This function allows the system to run specified functions during the scheduled time. For example, let the dome run a Pattern from 3 to 5 pm without any operator controlling the dome at that time.

1.Running Channel: There are 8 channels available.

2.Start Time: Set the start time of Timer Running.

3.End Time: Set the stop time of Timer Running.

4.Running: Enable the timer running functions during the specified period of time.

Available setting:

OFF: Do not operate (default setting)
Preset (1~220): Enable Preset function.
Sequence (1~4): Enable Sequence function.
Pattern (1~4): Enable Pattern function.
Autoscan (1~4): Enable Panning function.

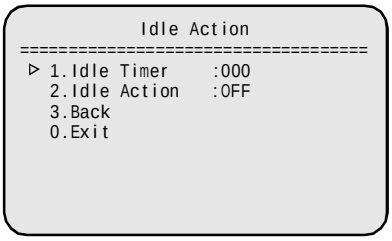
NOTE:

The specified time can not be overlapped.Otherwise, the assigned Timer Running functions are ineffective. Timer Running function is prior to Auto Action function.

Operations on keyboard will break the Timer Running function, however the function will continue after 10 seconds idle time.

5.7 Idle Action

Main menu à Function Setting à Idle Action



This function let the system automatically run assigned function after the idle time. For example: the dome is running a sequence and an operator breaks the sequence to do other work, the dome can automatically carry on the sequence within a period of time after the operator finishes using it.

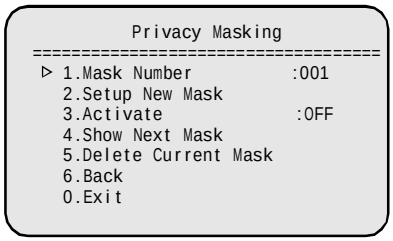
Idle Time : It is a specific time without any operation being performed. The selections are as follows: **Off, 005s~255s**.

Idle Action: The function could include:

OFF: Do not operate (default setting)
Preset (1~220): Call preset 001~220
Autoscan (1~4): Run autoscan 001~004
Sequence (1~4): Run sequence 001~004
Pattern (1~4): Run pattern 001~004

6. Privacy Masking

Main menu à Privacy Making

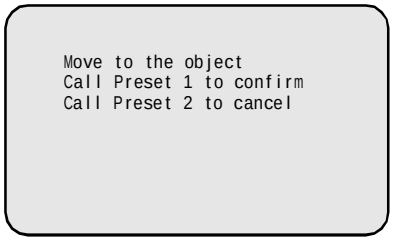


This function uses grey masks to shield where monitoring may intrude on privacy,such as a resident's window, a toilet,etc.

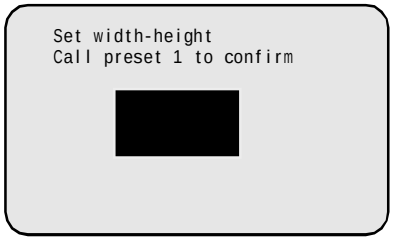
1.Mask Number: It sets the privacy mask number, ranging from 001 to 004.

2.Setup New Mask: This lets you determine the position to be masked according to the following steps.

Select Setup New Mask,and then tilt the joystick lever to left. The following picture will display on the screen.



Move the joystick lever to determine the object,and then press the 1 numerical button and PRESET button to confirm.The following picture will display on the screen.



Use the joystick lever to adjust the size of the mask.

u :Increase the width
t : Decrease the width
q : Increase the height
p : Decreasethe height

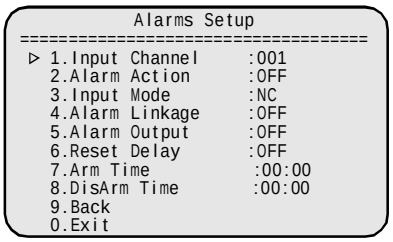
3.Activate: This sets whether each mask is flashing on the screen or not.For example, if mask number 002 is set to OFF, the mask will be cleared on the screen.

4.Show Next Mask: It shows the next mask.

5.Delete Current Mask: The current mask is deleted

7. Alarm Setup

Main Menu **à** Alarm Setup



1.Input Channel: It sets the number of the alarm input channel within the range of 1 to 7.

2.Alarm Action: Available settings are as follows: OFF,ON,and TIME.

3.Input Mode: It selects the current alarm input channel's normal state.There are two types of mode: NC(normal close) /NO(normal open).

4.Alarm Linkage: It sets whether such special functions as preset(1-220),pattern(1-4),autoscan(1-4), sequence(1-4) are carried out ,after the alarm channel is in operation.

5.Alarm Output: It selects corresponding output channel for current input channel.
Available settings: off, out,1,2

6.Reset Delay: It sets the time system will auto reset the alarm after current alarm inputs.
Available settings:off,1s-255s

7.Arm Time: It sets the alarm enable time.

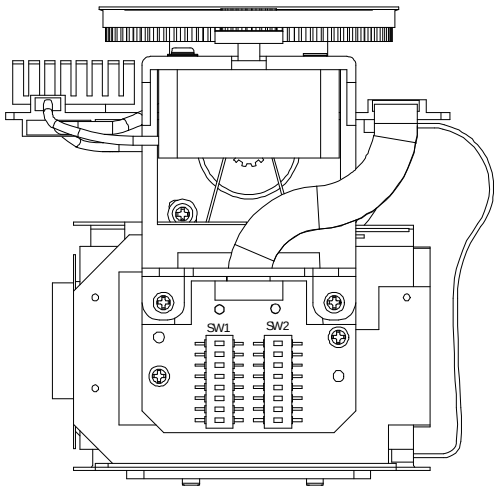
8.Disarm Time: It sets the alarm disable time.

Appendix I: DIP Switch & Jumper Settings

This appendix guides you to set protocol, baud rate, dome address, video cable type, alarm output and resistor jumper.

DIP Switches' position

The corresponding DIP-switches' positions are shown below:



Protocol and Baud rate setting

SW2 is used to set protocol and baud rate.The first six (1-6) bits of SW2 are for protocol setting and the last two (7-8) bits are for baud rate setting. Below chart shows the setting details. O means ON, blank means OFF. Default setting is 4800 bps.

Baud Rate	Switch Number							
	ON 1	2	3	4	5	6	7	8
2400bps								
4800bps							O	
9600bps								O
19200bps							O	O

NOTE: If you are using **AD** or **PHILIPS** or **BBV** protocol, please set the baud rate to 19200 bps.

This speed dome supports multi-protocol. The setting chart is shown below, O means ON, blank means OFF, X means either ON or OFF. Default setting is factory.

Protocol	Switch Number					
	ON 1	2	3	4	5	6
TeleEye DM2						
PELCO_P		O				
PELCO_D	O	O				
PELCO_C*	O	O		O		

NOTE: Protocols marked with * need other protocol board.

Dome address setting

The control commands contain target dome's ID. The dome only reacts to the command sent to its own address or broadcast address. So, each dome should be assigned an address. Four kinds of IDs are applicable for domes:

- **Hard ID**: Hard ID is set via DIP SW1, it can not be changed from OSD menu. Hard ID ranges from 1 to 255.
- **Programmable ID**: Set all 8bits of SW1 to ON to activate programmable address. Input 10-bit camera SN number, and then set dome ID by controller (The dome SN number can be found on the side of the camera or on the package.).
- **Debug ID**: Set all the bites of the SW1 to 0 (all OFF), the dome will react to any command for any ID.

  NOTE: Debug ID only works with Factory protocol.
- **Broadcast ID**: When a command is sent to broadcast ID, all domes connected to the control bus will respond to that command. Broadcast ID is definable, ranges from 1 to 255, the default broadcast ID is 255.

SW1 is used for setting dome ID. The setting is strictly in accordance with binary system, if you are not familiar with binary system please look up the address setting chart.

NOTE: When using Philips protocol, the first 5 bits of SW2 and all bits of SW1 are for address setting. Max address can be 8191. Example: in order to set address 2657, set bit 1, 6, 7 of SW1 and bit 2, 4 of SW2 ON. (2657=1+32+64+512+2048)

Address setting chart

O means ON, blank means OFF.

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
0								
1	O							
2		O						
3	O	O						
4			O					
5	O		O					
6		O	O					
7	O	O	O					
8				O				
9	O			O				
10		O		O				
11	O	O		O				
12			O	O				
13	O		O	O				
14		O	O	O				
15	O	O	O	O				
16					O			
17	O				O			
18		O			O			
19	O	O			O			
20			O		O			
21	O		O		O			
22		O	O		O			
23	O	O	O		O			
24				O	O			
25	O			O	O			
26		O		O	O			
27	O	O		O	O			
28			O	O	O			
29	O		O	O	O			
30		O	O	O	O			
31	O	O	O	O	O			
32						O		
33	O					O		
34		O				O		
35	O	O				O		
36			O			O		
37	O		O			O		
38		O	O			O		
39	O	O	O			O		
40				O		O		
41	O			O		O		
42		O		O		O		
43	O	O		O		O		

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
44			○	○		○		
45	○		○	○		○		
46		○	○	○		○		
47	○	○	○	○		○		
48					○	○		
49	○				○	○		
50		○			○	○		
51	○	○			○	○		
52			○		○	○		
53	○		○		○	○		
54		○	○		○	○		
55	○	○	○		○	○		
56				○	○	○		
57	○			○	○	○		
58		○		○	○	○		
59	○	○		○	○	○		
60			○	○	○	○		
61	○		○	○	○	○		
62		○	○	○	○	○		
63	○	○	○	○	○	○		
64							○	
65	○						○	
66		○					○	
67	○	○					○	
68			○				○	
69	○		○				○	
70		○	○				○	
71	○	○	○				○	
72				○			○	
73	○			○			○	
74		○		○			○	
75	○	○		○			○	
76			○	○			○	
77	○		○	○			○	
78		○	○	○			○	
79	○	○	○	○			○	
80					○		○	
81	○				○		○	
82		○			○		○	
83	○	○			○		○	
84			○		○		○	
85	○		○		○		○	
86		○	○		○		○	
87	○	○	○		○		○	

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
88				○	○		○	
89	○			○	○		○	
90		○		○	○		○	
91	○	○		○	○		○	
92			○	○	○		○	
93	○		○	○	○		○	
94		○	○	○	○		○	
95	○	○	○	○	○		○	
96						○	○	
97	○					○	○	
98		○				○	○	
99	○	○				○	○	
100			○			○	○	
101	○		○			○	○	
102		○	○			○	○	
103	○	○	○			○	○	
104				○		○	○	
105	○			○		○	○	
106		○		○		○	○	
107	○	○		○		○	○	
108			○	○		○	○	
109	○		○	○		○	○	
110		○	○	○		○	○	
111	○	○	○	○		○	○	
112					○	○	○	
113	○				○	○	○	
114		○			○	○	○	
115	○	○			○	○	○	
116			○		○	○	○	
117	○		○		○	○	○	
118		○	○		○	○	○	
119	○	○	○		○	○	○	
120				○	○	○	○	
121	○			○	○	○	○	
122		○		○	○	○	○	
123	○	○		○	○	○	○	
124			○	○	○	○	○	
125	○		○	○	○	○	○	
126		○	○	○	○	○	○	
127	○	○	○	○	○	○	○	
128								○
129	○							○
130		○						○
131	○	○						○

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
132			○					○
133	○		○					○
134		○	○					○
135	○	○	○					○
136				○				○
137	○			○				○
138		○		○				○
139	○	○		○				○
140			○	○				○
141	○		○	○				○
142		○	○	○				○
143	○	○	○	○				○
144					○			○
145	○				○			○
146		○			○			○
147	○	○			○			○
148			○		○			○
149	○		○		○			○
150		○	○		○			○
151	○	○	○		○			○
152				○	○			○
153	○			○	○			○
154		○		○	○			○
155	○	○		○	○			○
156			○	○	○			○
157	○		○	○	○			○
158		○	○	○	○			○
159	○	○	○	○	○			○
160						○		○
161	○					○		○
162		○				○		○
163	○	○				○		○
164			○			○		○
165	○		○			○		○
166		○	○			○		○
167	○	○	○			○		○
168				○		○		○
169	○			○		○		○
170		○		○		○		○
171	○	○		○		○		○
172			○	○		○		○
173	○		○	○		○		○
174		○	○	○		○		○
175	○	○	○	○		○		○

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
176					○	○		○
177	○				○	○		○
178		○			○	○		○
179	○	○			○	○		○
180			○		○	○		○
181	○		○		○	○		○
182		○	○		○	○		○
183	○	○	○		○	○		○
184				○	○	○		○
185	○			○	○	○		○
186		○		○	○	○		○
187	○	○		○	○	○		○
188			○	○	○	○		○
189	○		○	○	○	○		○
190		○	○	○	○	○		○
191	○	○	○	○	○	○		○
192							○	○
193	○						○	○
194		○					○	○
195	○	○					○	○
196			○				○	○
197	○		○				○	○
198		○	○				○	○
199	○	○	○				○	○
200				○			○	○
201	○			○			○	○
202		○		○			○	○
203	○	○		○			○	○
204			○	○			○	○
205	○		○	○			○	○
206		○	○	○			○	○
207	○	○	○	○			○	○
208					○		○	○
209	○				○		○	○
210		○			○		○	○
211	○	○			○		○	○
212			○		○		○	○
213	○		○		○		○	○
214		○	○		○		○	○
215	○	○	○		○		○	○
216				○	○		○	○
217	○			○	○		○	○
218		○		○	○		○	○
219	○	○		○	○		○	○

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
220			○	○	○		○	○
221	○		○	○	○		○	○
222		○	○	○	○		○	○
223	○	○	○	○	○		○	○
224						○	○	○
225	○					○	○	○
226		○				○	○	○
227	○	○				○	○	○
228			○			○	○	○
229	○		○			○	○	○
230		○	○			○	○	○
231	○	○	○			○	○	○
232				○		○	○	○
233	○			○		○	○	○
234		○		○		○	○	○
235	○	○		○		○	○	○
236			○	○		○	○	○
237	○		○	○		○	○	○
238		○	○	○		○	○	○
239	○	○	○	○		○	○	○
240					○	○	○	○
241	○				○	○	○	○
242		○			○	○	○	○
243	○	○			○	○	○	○
244			○		○	○	○	○
245	○		○		○	○	○	○
246		○	○		○	○	○	○
247	○	○	○		○	○	○	○
248				○	○	○	○	○
249	○			○	○	○	○	○
250		○		○	○	○	○	○
251	○	○		○	○	○	○	○
252			○	○	○	○	○	○
253	○		○	○	○	○	○	○
254		○	○	○	○	○	○	○
255 Program-mable Address	○	○	○	○	○	○	○	○

Video cable type setting

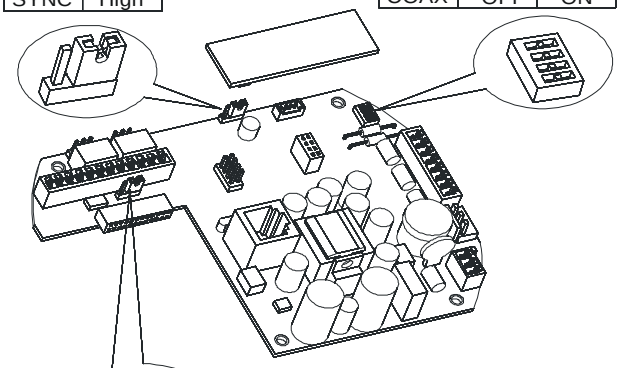
Speed dome supports two common types of cables to transmit video signal, coaxial cable and twisted pair cable. Comparing to twisted pair cable, coaxial cable does not need extra adapter and band width is higher but coaxial cable is more expensive and transmission distance is shorter.

When the first and second pins in the SW2 set ON ,the video signal is transmitted via twisted-pair.When the third and fourth pins in the SW2 set ON, the video signal is transfered via coxial cable. Factory default is via coxial cable.(refer to following picture)

If connect the first and second pins in the JP15, the video has the synchro signals, which are based on the power supply of the dome.If connect the second and third pins in the JP15, the level is fixed to be high, and the video has no synchro signals.(refer to following picture)

JP15	
1-2	2-3
SYNC	High

SW2	1-2	3-4
TW_P	ON	OFF
COAX	OFF	ON

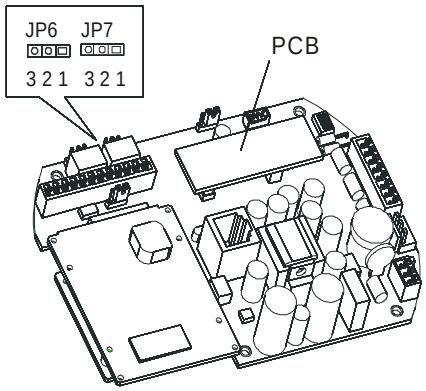


JP14
2--3
DOME

Alarm output method setting

There are two alarm output methods: NO and NC. NO means normal state is open circuit, the circuit will be closed when an alarm comes in. NC means normal close circuit.

When choosing pins 1&2 in JP6 and JP7,the alarm output state is NC. When choosing pins 2&3 in JP6 and JP7, the alarm output state is NO. Factory default is NO.(refer to the following picture)

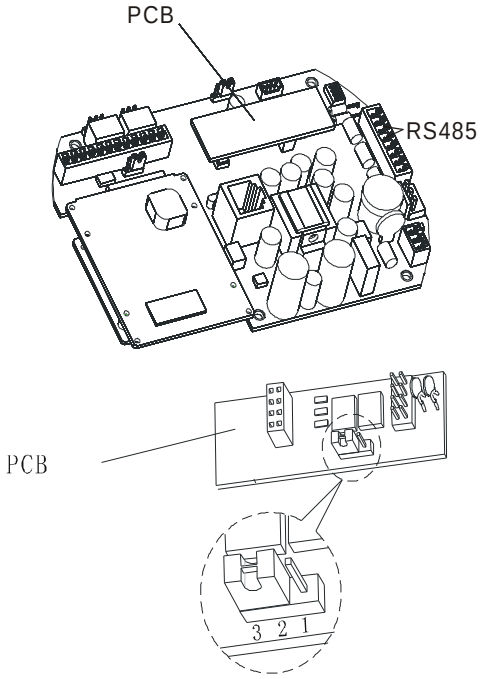


1 2	2 3
NC	NO

Resistor jumper setting

RS485 bus needs two 120 Ohm resistors at both ends. Set on the 120 Ohm resistors of the two devices (keyboard or dome) in the farthest distance on RS485 bus. Default setting is OFF. Please refer to page 54 for more RS485 details.

When connecting pins 1&2 in JP1, the 120 Ohms termination resistor is connected. When connecting pins 2&3 in JP1, the termination resistor is unconnected.



JP1	
1 2	2 3
ON	OFF

Appendix II: Wire Diameter & Transmission Distance Comparison Chart

The transmission distance listed below are farthest ones recommended for each given wire diameter when the 24V AC voltage loss ratio is below 10% (for equipment powered by AC, the allowed maximum voltage loss ratio is 10%).For example, a set of equipment with nominal power as 80VA, installed 35 feet (10m) away from transformer, needs a wire with a minimum diameter of 0.8000mm.

Wire Diameter(mm)

		0.8000	1.000	1.250	2.000	
Power (VA)	10	283 (86)	451 (137)	716 (218)	1811 (551)	Transmission Distance (Feet(m))
	20	141 (42)	225 (68)	358 (109)	905 (275)	
	30	94 (28)	150 (45)	238 (72)	603 (183)	
	40	70 (21)	112 (34)	179 (54)	452 (137)	
	50	56 (17)	90 (27)	143 (43)	362 (110)	
	60	47 (14)	75 (22)	119 (36)	301 (91)	
	70	40 (12)	64 (19)	102 (31)	258 (78)	
	80	35 (10)	56 (17)	89 (27)	226 (68)	
	90	31 (9)	50 (15)	79 (24)	201 (61)	
	100	28 (8)	45 (13)	71 (21)	181 (55)	
	110	25 (7)	41 (12)	65 (19)	164 (49)	
	120	23 (7)	37 (11)	59 (17)	150 (45)	
	130	21 (6)	34 (10)	55 (16)	139 (42)	
	140	20 (6)	32 (9)	51 (15)	129 (39)	
	150	18 (5)	30 (9)	47 (14)	120 (36)	
	160	17 (5)	28 (9)	44 (13)	113 (34)	
	170	16 (4)	26 (7)	42 (12)	106 (32)	
	180	15 (4)	25 (7)	39 (11)	100 (30)	
	190	14 (4)	23 (7)	37 (11)	95 (28)	
	200	14 (4)	22 (6)	35 (10)	90 (27)	

Wire Gauge Conversion Chart

Bare wire diameter metric size (mm)	AWG (approximate)	SWG (opproximate)	QQ-1 type maximum outer diameter (mm)	Bare wire cross-sectional area (mm)
0.050	43	47	0.065	0.00196
0.060	42	46	0.080	0.00283
0.070	41	45	0.090	0.00385
0.080	40	44	0.100	0.00503
0.090	39	43	0.110	0.00636
0.100	38	42	0.125	0.00785
0.110	37	41	0.135	0.00950
0.130	36	39	0.155	0.01327
0.140	35		0.165	0.01539
0.160	34	37	0.190	0.02011
0.180	33		0.210	0.02545
0.200	32	35	0.230	0.03142
0.230	31		0.265	0.04115
0.250	30	33	0.290	0.04909
0.290	29	31	0.330	0.06605
0.330	28	30	0.370	0.08553
0.350	27	29	0.390	0.09621
0.400	26	28	0.440	0.1257
0.450	25		0.490	0.1602
0.560	24	24	0.610	0.2463
0.600	23	23	0.650	0.2827
0.710	22	22	0.760	0.3958
0.750	21		0.810	0.4417
0.800	20	21	0.860	0.5027
0.900	19	20	0.960	0.6362
1.000	18	19	1.07	0.7854
1.250	16	18	1.33	1.2266
1.500	15		1.58	1.7663
2.000	12	14	2.09	3.1420
2.500			2.59	4.9080
3.00				7.0683

Appendix III: RS485 Bus Basic Knowledge

1. Characteristics of RS485 Bus

As specified by RS485 standards, RS485 Bus is of half-duplexed data transmission cables with characteristic impedance as 120 Ohm. The maximum load capacity is 32 unit loads (including main controller and controlled equipment).

2. Transmission distances of RS485 Bus

When user selects the 0.56mm (24AWG) twisted pair wires as data transmission cable,the maximum theoretical transmitting distances are as follows:

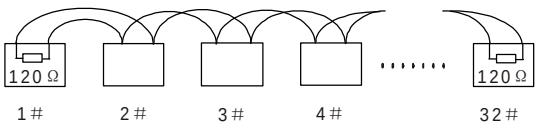
Baud Rate	Transmission Distance (Max.)
2400bps	5,906ft (1800m)
4800bps	3,937ft (1200m)
9600bps	2,625ft (800m)

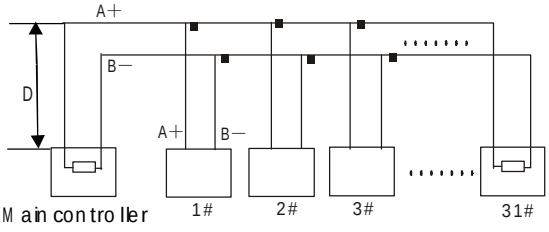
If user selects thinner cables, or installs the dome in an environment with strong electromagnetic interference, or connects lots of equipment to the RS485 Bus, the maximum transmitting distance will be decreased. To increase the maximum transmitting distance, do the contrary.

3. Connection and termination resistor

3-1 The RS485 standards require a daisy-chain connection between the equipment. There must be termination resistors with 120 Ohm impedance at both ends of the connection (refer to following pictures).

Please refer to below picture for simple connection. Distance "D" should not exceed 7 meters.



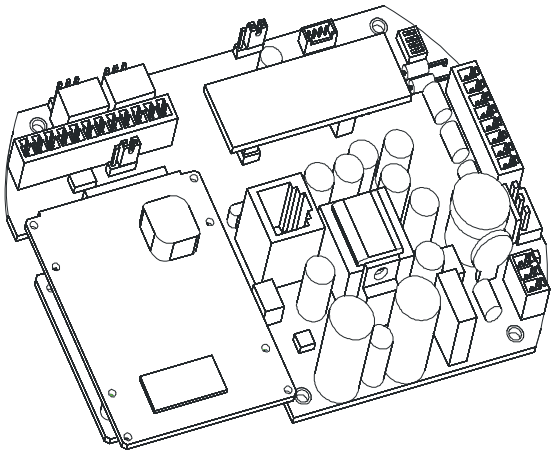


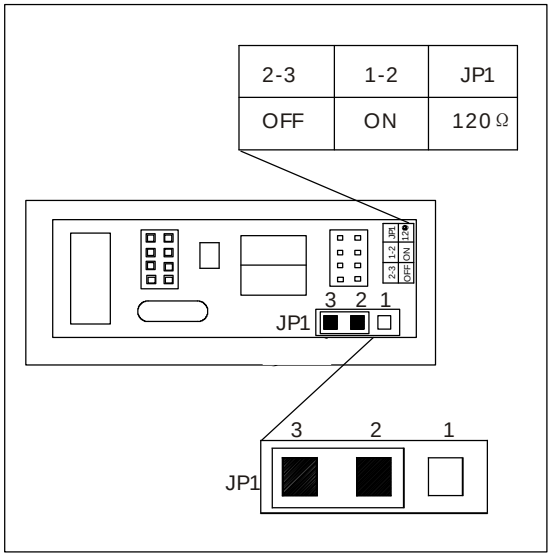
3-2 The connection of 120 Ohm termination resistor:

The termination resistor is ready on the Protocol PCB. There are two kinds of connection. Please refer to the Protocol PCB jumper setting form (refer to following pictures).

1) In the picture it is the factory default connection. The jumper is seated on Pin2&Pin3 and the termination resistor is not connected.

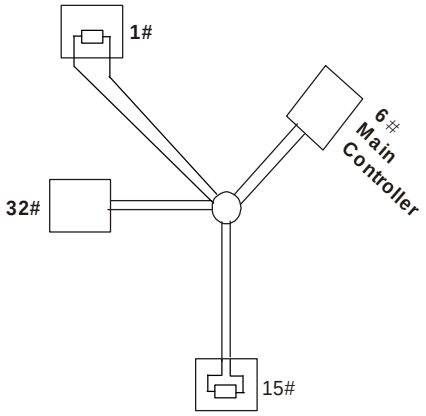
2) when connecting the 120 Ohm termination resistor, user should pull out the protocol PCB and plug the jumper on Pin1&Pin2. Install the PCB back and the termination resistor is connected.



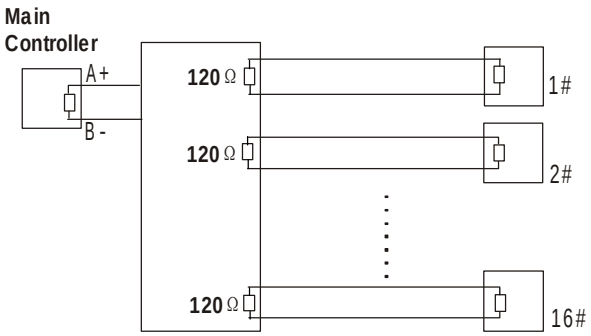


4. Problems in practical connection

In some circumstances user adopts a star configuration in practical connection. The termination resistors must be connected to the two equipment that are farthest away from each other, such as equipment 1# and 15# in the Picture as below. As the star configuration is not in conformity with the requirements of RS485 standards, problems such as signal reflections, lower anti-interference performance arise when the cables are long in the connection. The reliability of control signals is decreased with the phenomena that the dome does not respond to or just responds at intervals to the controller, or does continuous operation without stop (refer to the following picture).



In such circumstances the factory recommends the usage of RS485 distributor. The distributor can change the star configuration connection to the mode of connection stipulated in the RS485 standards. The new connection achieves reliable data transmission (refer to following picture).



5. RS485 Bus Troubleshooting (refer to following form)

Trouble	Possible Cause	Solution
Dome can do self-testing but cannot be controlled	1. The address and baud rate settings of dome ars not in conformity with those of controller 2. The"+"and "-"connection of RS485 Bus is incorrect 3. Wiring is not fully seated 4. There is breakage in the middle section of the RS485 Bus	1. Change the address and baud rate of controller or dome 2. Correct the connection 3. Make sure the connections are fully seated
The dome can be controlled but the operation is not smooth	1. The RS485 Bus line is not in good contact with the connectors 2. One wire of the RS485 Bus is broken 3. The dome is very far away from controller 4. There are too many domes connected in the system	1. Secure the connection 2. Replace RS485 Bus wires 3. Add termination resistors to the system 4. Install RS485 distributor

Appendix IV: Lightning Proof & Surge Proof

The product adopts TVS lightning proof technology to prevent from damage by lightning strike below 4000V and impulse signals such as surge; but it is also necessary to abide by the following precautions to ensure electrical safety based on practical circumstances:

Keep the communication cables at least 50 meters away from high voltage equipment or cables.

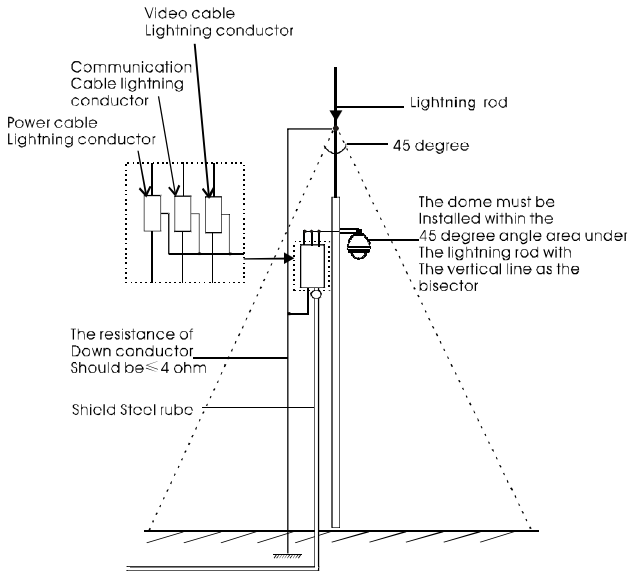
Make outdoor cable laying-out under eaves as possible as you can.

In open area shield cables in steel tube and conduct a single point ground to the tube. Trolley wire is forbidden in such circumstances.

In strong thunderstorm or high faradic zone (such as high voltage transformer substation), extra strong lightning proof equipment must be installed.

Take the building lightning proof requirements into account to design the lightning proof and grounding of outdoor equipment and cable laying-out in accordance with the national and industrial standards.

The system must be grounded with equal potentials. The earth ground connection must satisfy the anti-interference and electrical safety requirements and must not short circuited with high voltage electricity net. When the system is grounded separately, the impedance of down conductor should be less than 4 Ohms and the sectional area of down conductor should be greater than 25 square mm (refer to following picture).



Appendix V: The Cleaning Of Down Cover

To obtain constant clear videos, user should clean the down cover periodically.

Be cautious when cleaning. Hold the down cover ring only to avoid direct touch to the acrylic down cover. The acid sweat mark of fingerprint will corrode the coating of down cover and scratch on down cover will cause vague images.

Use soft dry cloth or the substitute to clean the inner and outer surfaces.

For hard contamination, use neutral detergent. Any cleanser for high grade furniture is applicable.

Appendix VI: Trouble Shooting

Trouble	Possible Causes	Solution
No action, no video after powered up	If the red LED on the power board in the housing is not lit, causes may be: 1. The 24V AC power supply is not connected to the port of the power board or the contact is not good 2. The municipal power supply has been cut off or the 24V AC transformer is in malfunction If the red LED on the power board in the housing is lit, causes may be: 1. Fuse is bad or it is not installed 2. The MOLEX is not connected to RJ45 or the connection is not good in contact; the power PCB is not connected to receiver PCB or the connection is not good in contact 3. 24V AC transformer outputs voltage is too low 4. The power PCB is faulty	1. Check if the power supply is connected, or confirm if the plug contacts well 2. Check to see if the municipal power supply has been cut off. Check to see if the 24V AC transformers is ok.. 1. Replace the fuse. The fuse is a 4-ampere one 2. Check and confirm all the wire connections are correct and good in contact 3. Use a voltmeter to check the voltage load to the dome. If the voltage is less tan 24V AC, the voltage is not applicable 4. Please contact factory or distributor for replacement of power PCB
Self-testing and image are normal but the dome is uncontrollable	1. The dome DIP switch setting is incorrect 2. The two poles of the control cables are connected wrongly or the connection is open	1. Reset the DIP switches according to the DIP switch chart (please refer to page 48) 2. Check the control cables and confirm the connection is correct and good in contact
Fan does not function	1. Wire connection of fan is faulty	1. Connect the fan wire. If the fan still does not function, contact the distributor or factory
Vague image	1. Manual focus has been set 2. Unclean down cover	1. Operate dome or call any preset 2. Clean the down cover

Appendix VII : Specification

DM870 Specifications

Model	DM872	DM879
CAMERA OPTICS		
Scanning System	PAL (625 lines, 50 fields per second) NTSC (525 lines, 60 fields per second)	
Image Sensor	1/4" interline transfer CCD	
Resolution	480 TVL (Day) 550 TVL (Night)	
Minimum Illumination	0.01 Lux at 1/3 sec (ICR-on)	
Electronic Sensitivity Boost	On / Off	
Video Output Level	1.0Vp-p (75ohms , composite)	
Video S/N Ratio	≥50dB	
White Balance	Auto / Manual	
Gain Control	Auto / Manual	
Electronic Shutter	1/50 – 1/10,000sec	
Iris	Auto / Manual	
Back Light Compensation	On / Off	
Lens	Aperture stop: F/1.6 - 3.8 Focal length: f=2.5 - 91mm Viewing angle: 2.2º - 54.2º	
Zoom	Optical: 26X / Electronic:12X (Total: 312X)	
MECHANICAL DESIGN		
Privacy Masking	On / Off, 24masks	
Panning	Range: 360º continuous Manual speed: 0.1º - 160º/sec Preset speed: 360º/sec	
Tilting	Range: 0º - 90º Manual speed: 0.1º - 160º/sec Preset speed: 360º/sec	
Control	220 Presets, 4 Pattern, 4 Tours	
Protocol	TeleEye DM2, Pelco D, Pelco P	
Built-in Alarm	7 Inputs, 2 Outputs	
POWER / ENVIRONMENT		
Weather Proof Standard	-	IP66
Fan	-	Continuous
Heater	-	Auto Start
Humidity	0% - 95% (No condensation)	-
Operating Temperature	-10ºC – 50ºC	-40ºC - 60ºC
Power Source	AC 24V, 30W (max)	AC 24V, 50W (max)
Net Weight	5kg	5.32kg

DM880 Specifications

Model	DM882	DM889
CAMERA OPTICS		
Scanning System	PAL (625 lines, 50 fields per second) NTSC (525 lines, 60 fields per second)	
Image Sensor	1/4" interline transfer CCD	
Resolution	480 TVL (Day) 550 TVL (Night)	
Minimum Illumination	0.1 Lux at 1/4 sec F1.6, 50IRE (ICR-on)	
Electronic Sensitivity Boost	On / Off	
Video Output Level	1.0Vp-p (75ohms , composite)	
Video S/N Ratio	≥50dB	
White Balance	Auto / Manual	
Gain Control	Auto / Manual	
Electronic Shutter	1/1 – 1/10,000sec	
Iris	Auto / Manual	
Back Light Compensation	On / Off	
Lens	Aperture stop: F/1.6 – 4.5 Focal length: f=3.4 – 122.4mm Viewing angle: 1.7º - 57.8º	
Zoom	Optical: 36X / Electronic:12X (Total: 432X)	
MECHANICAL DESIGN		
Privacy Masking	On / Off, 24masks	
Panning	Range: 360º continuous Manual speed: 0.1º - 160º/sec Preset speed: 360º/sec	
Tilting	Range: 0º - 90º Manual speed: 0.1º - 160º/sec Preset speed: 360º/sec	
Control	220 Presets, 4 Pattern, 4 Tours	
Built-in Alarm	7 Inputs, 2 Outputs	
POWER / ENVIRONMENT		
Weather Proof Standard	-	IP66
Fan	-	Continuous
Heater	-	Auto Start
Humidity	0% - 95% (No condensation)	-
Operating Temperature	-10ºC – 50ºC	-40ºC - 60ºC
Power Source	AC 24V, 30W (max)	AC 24V, 50W (max)
Net Weight	5kg	5.32kg